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APPENDICES

Appendix 1.1. Members of the Order Carnivora not considered to be trophic carnivores1 (as defined for this thesis) and thus not used in comparative analyses.

Family	Latin Name	Common Name	Distribution[2]
Canidae	*Cerdocyon thous*	Crab-eating Fox	SA
Canidae	*Atelocynus microtus*	Small-eared Dog	SA
Canidae	*Otocyon megalotus*	Bat-eared Fox	SA
Ursidae	*Tremarctos ornatus*	Spectacled Bear	SA
Procyonidae	*Procyon lotor*	Racoon	NA/SA
Procyonidae	*Nasua nasua*	Coati	SA
Procyonidae	*Nasuella olivacea*	Mountain Coati	SA
Procyonidae	*Potos flavus*	Kinkajou	SA
Mustelidae	*Mydaus javanensis*	Stink Badger	SUM/JAV/BOR
Mustelidae	*M. marchei*	Stink Badger	PAL
Mustelidae	*Conepatus mesolencus*	Hog-nosed Skunk	NA/SA
Mustelidae	*C. leuconotus*	Hog-nosed Skunk	NA
Mustelidae	*C. semistriatus*	Hog-nosed Skunk	SA
Mustelidae	*C. chinga*	Hog-nosed Skunk	SA
Viverridae	*Poiana linsang*	African Linsang	AF
Viverridae	*Nandinia binotata*	African Palm Civet	AF
Viverridae	*Arctictis binturong*	Binturong	SUM/JAV/BOR/
Viverridae	*Hemigalus derbyanus*		SUM/BOR
Viverridae	*H. hosei*		BOR
Viverridae	*Fossa fossa*	Malagasy Civet	MAD
Viverridae	*Eupleres goudoti*	Falanouc	MAD
Herpestidae	*Mungoictis desemlineata*	Narrow-striped Mongoose	MAD
Herpestidae	*Salanoia concolor*	Brown-tailed Mongoose	MAD
Herpestidae	*Mungos gambianus*	Gambian Mongoose	AF
Herpestidae	*M. mungo*	Banded Mongoose	AF
Herpestidae	*Crossarchus obscurus*	Cusimanse	AF
Herpestidae	*C. platycephalus*	Cusimanse	AF
Herpestidae	*C. alexandri*	Cusimanse	AF
Herpestidae	*C. ansorgei*	Cusimanse	AF
Herpestidae	*Liberiictis kuhni*		AF
Herpestidae	*Helogale parvula*	Dwarf Mongoose	AF
Herpestidae	*H. hirtula*	Dwarf Mongoose	AF
Herpestidae	*Dologale dybowski*	Tropical Mongoose	AF
Herpestidae	*Bdeogale crassicauda*	Black-legged Mongoose	AF
Herpestidae	*B. nigriceps*	Black-legged Mongoose	AF
Herpestidae	*Rhyncogale mellerii*	Mellers' Mongoose	AF
Herpestidae	*Ichneumia albicauda*	White-tailed Mongoose	AF
Herpestidae	*Cynictis penicillata*	Yellow Mongoose	AF
Herpestidae	*Paracynictis selousi*	Grey Meerkat	AF
Herpestidae	*Suricata suricata*	Suricate	AF
Hyaenidae	*Proteles cristatus*	Aardwolf	AF

Note. 1. Based upon information in Nowak and Walker (1991).
2 Distribution codes are: AF, Africa; SA, South America; NA, North America; Bor, Borneo; Pal, Palawan; Sum, Sumatra; Jav, Java; Mad. Madagascar.

Appendix 2.1. The distribution in geological time of Australia's carnivorous mammal species.

Family and *species* of carnivore	**Source**
l. Oligocene/ e. Miocene (approx. 25mya)	
F. Thylacoleonidae	
Priscileo pitikantensis	Rauscher 1987
P. roskellyae	Gillespie 1997
F. Thylacinidae	
Badjcinus turnbulli	Muirhead and Wroe 1998
Miocene (23.7-5.3 mya)	
F. Thylacoleonidae	
Wakaleo oldfieldi	Archer and Dawson 1982
W. vanderleuri	Archer and Dawson 1982
W. alcootensis	Archer and Dawson 1982
Undescribed genus and species	Archer *et al.* 1991a
F. Potoroidae	
Ekaltadeta ima	Archer and Flannery 1985
Ekaltadeta jamiemulvaneyi	Wroe 1997b
F. Thylacinidae	
Thylacinus macknessi	Archer 1982b
Nimbacinus dicksoni	Muirhead & Archer 1990
Wabulacinus ridei	Muirhead 1997
Ngamalacinus timmulvaneyi	Muirhead 1997
Murabacinus gadyuli	Wroe 1996
Thylacinus potens	Archer 1982b
Undesignated Dasyuromorphian Family	
D. maculatus-like Kutjamarpu species	Archer 1982a
Dasylurinja kokuminola	Archer 1982a
Pliocene (5.3-1.6 mya)	
F. Thylacoleonidae	
Thylacoleo hilli	Archer and Dawson 1982
Thylacoleo crassidentatus	Archer and Dawson 1982
Thylacoleo sp	Pledge 1992
F. Potoroidae	
Jackmahoneya sp	Ride 1993
Propleopus sp	Tedford 1994
F. Thylacinidae	
Thylacinus cynocephalus	Archer 1982a

F. Dasyuridae	
Sarcophilus sp. 1	Tedford 1994
*Sarcophilus moornaensis**	Crabb 1982
Glaucodon ballaratensis	Archer 1982a
D. maculatus-sized dasyurid	Tedford *et al.* 1992
Dasyurus dunmalli	Archer 1982a
Dasyurus hallucatus	Archer 1982a
Pleistocene (1.6-0.01 mya)	
F. Thylacoleonidae	
Thylacoleo carnifex	Archer and Dawson 1982
F. Potoroidae	
Propleopus oscillans	Archer & Flannery 1985
Propleopus wellingtonensis	Archer & Flannery 1985
Propleopus chillagoensis	Archer & Flannery 1985
F. Thylacinidae	
Thylacinus cyanocephalus	Dawson 1982b
F. Dasyuridae	
Sarcophilus sp. 2	Dawson 1982a
Sarcophilus sp. 3	Dawson 1982a
*Sarcophilus moornaensis**	Crabb 1982
Sarcophilus laniaris	Dawson 1982a
Sarcophilus harrisii	Dawson 1982a
Dasyurus maculatus	Numerous sources summarised in this study (Appendix 2.2)
Dasyurus hallucatus	Numerous sources summarised in this study (Appendix 2.2)
Dasyurus geoffroii	Numerous sources summarised in this study (Appendix 2.2)
Dasyurus viverrinus	Numerous sources summarised in this study (Appendix 2.2)
Holocene (10 000 bp- present)	
F. Thylacinidae	
Thylacinus cyanocephalus	Dawson 1982a
F. Dasyuridae	
Sarcophilus harrisi	Dawson 1982a
Dasyurus maculatus	Numerous sources summarised in this study (Appendix 2.2)
Dasyurus hallucatus	Numerous sources summarised in this study (Appendix 2.2)
Dasyurus geoffroii	Numerous sources summarised in this study (Appendix 2.2)
Dasyurus viverrinus	Numerous sources summarised in this study (Appendix 2.2)
F. Canidae	
Canis lupus dingo	Corbett 1995

Vulpes vulpes	Newsome & Coman 1989
F. Felidae	
Felis catus	Jones 1989

Note.

*, *S. moornaensis*, from the Fisherman's Cliff Local Fauna is dated as either late Pliocene or early Pleistocene.

Appendix 2.2. Pliocene – Recent fossil sites reviewed in this study and the carnivorous mammals identified from them.

Site Number	Locality	Age[A]	Carnivore spp.[B]	Source
NEW SOUTH WALES				
1	Bingara		Sl, Tc, Thc	Flannery 1983
2	Bow	e.-m. Pliocene	Dd, Po, Thcr, Thcfh	Flannery & Archer 1984; Rich 1991
3	Douglas Cave, nr Stuart Town	<29200	Dv, Tc	Gorter 1977
4	Fisherman's Cliff	m. Pliocene	Dh, Sm	Marshall 1973; Rich 1991; Crabb 1982
5	Frenchman's Ck	l. Pleistocene	Sl, Tc	Marshall 1973
6	Lake Menindee	6 570 +/- 100 to 26300 +/- 1500	Scf.h,Tc, Thc, Po	Tedford 1967
7	Lake Tandou	105 +/- 65 to 12530 +/- 1630	Dg/v,Sh,Sl, Tc	Merrilees 1973
8	Lake Victoria	6300 +/- 140 to 18200 +/- 800	Dcf.h, Tc, Thc, Sl	Marshall 1973
9	Lower Darling R, TNL 20	27000-22000	Dg, Dh	Balme 1995
10	Lower Darling R, TNL 26	18000-9000	**Dm**, Dg, Sh	Balme 1995
11	Lower Darling R,	9-5000	Dsp	Balme 1995
12	Lower Darling R, TMC 11	5000	Dh	Balme 1995
13	Lower Darling R, TWH 1	9-5000	Sh	Balme 1995
14	Mulurulu		**Dm**(sub)	Hope 1978
15	Mungo	19-35000	**Dm**, Sh, Dg/v?	Hope 1978
16	Mt Fairy		Sl	Flannery 1983
17	Reddestone Ck, Glen Innes		Ssp, Thc, Po	Horton and Connah 1981
18	Seelands Rock Shelter	350-2852+/-47	Dv	Wakefield 1974; Ryder 1974
19	Spring Ck	>35000	Thc	White and Flannery 1995
20	Wellington Caves	Pliocene- recent	**Dm** (in youngest strata only), Dcfv/g, Sl, Tc, Thc, Pw	Dawson 1985; Archer & Flannery 1985; S. Wroe (pers comm.)

PAPUA NEW GUINEA				
21	Awe/Otibanda	appr. 3.3mya	Tc	Rich 1991
22	Nombe Rock Shelter	14 000 to 24 000	Da,Tc	Gillieson & Mountain 1983
QUEENSLAND				
23	Bluff Downs	4-4.5 my	Dd,Tsp, Thcr	Archer and Wade 1976; Rich 1991
24	Chinchilla	e.-m. Pliocene	Dd, Tc, Thcr	Bartholomai 1971, Bartholomai & Woods 1976
25	Chillagoe Caves	?Pleistocene	Pc, Ssp	Archer *et al.* 1978; Archer and Flannery 1985
26	e. Darling Downs Cattle Ck	Pleistocene	Sl, Tc, Po	Molnar and Kurz 1997
27	e. Darling Downs Dalby		Thc	Molnar and Kurz 1997
28	e. Darling Downs Jimbour Ck		Thc	Molnar and Kurz 1997
29	e. Darling Downs Cecil Plains Site 20		Thsp	Molnar and Kurz 1997
30	e. Darling Downs Toowoomba Region: Site 27		Tc, Thc	Molnar and Kurz 1997
31	e. Darling Downs Toowoomba Region: Gowrie ck		Ssp, Tc, Thc	Molnar and Kurz 1997
32	e. Darling Downs Clfton Region: Site 36		Dsp, Sl, Tc, Thc	Molnar and Kurz 1997
33	e. Darling Downs Clfton Region: Site 38		Dsp, Tc	Molnar and Kurz 1997
34	e. Darling Downs Clfton Region: Site 40		Ssp, Thsp	Molnar and Kurz 1997
35	e. Darling Downs Clfton Region: Site 41		Thc	Molnar and Kurz 1997
36	e. Darling Downs Clfton Region: Site 42		Dsp	Molnar and Kurz 1997

37	e. Darling Downs Clfton Region: Site 44		Dsp, Thsp	Molnar and Kurz 1997
38	e. Darling Downs Clfton Region: Site 45		Thc	Molnar and Kurz 1997
39	e. Darling Downs Clfton Region: Site 51		Dsp	Molnar and Kurz 1997
40	e. Darling Downs King Ck		Thc, Po	Molnar and Kurz 1997
41	Floraville	Pliocene - e. Pleistocene	Dsp	Rich 1991, Archer 1982a
42	Gore Caves	Pleistocene	Sl, Ssp, Tc, Thc	Bartholamai 1977
43	Marmor	Pleistocene	Sl, Tc, Thc	Longman 1925a, 1925b
44	Rockhampton Caves	?Pleistocene	Ssp	Longman 1924
45	Texas Caves, Russenden	Pleistocene	Dv, Sl, Tc	Archer 1978
46	Wyandotte Ck	30 400 +/- 750 to >45 000 & <410 000	Dcf.g	McNamara 1990
SOUTH AUSTRALIA				
47	Curramulka - Corra Lynn Cave	Miocene-Pliocene	Gb,Tsp, Thsp	Rich 1991; Pledge 1992
48	Black's Point Sinkhole	Holocene	Dcfg,Tc	McDowell 1997
49	Cooper Ck-Katipiri sands etc	23-25000	Ssp, Tc	Rich 1991
50	Devon Downs	4250 +/-180	Sh, Dg	Hale & Tindale 1930; Wakefield 1964, Lundelius 1983
51	Drowned cave	>10000	**Dm**	Pledge 1980
52	Fromm's Landing	>1000 to 5000	Dg, Sh, Tc	Wakefield 1964
53	Henshke's Cave	33 800 +/- 2400	Dv, Tc, Thc, Sl, Po	Pledge 1990
54	Kelly's Hill Cave, Kangaroo Island		Sh	
55	Koonalda Cave	20 000	Dv, Sh	Thorne 1971
56	Lake Kanunka	?Pleistocene/Plio	Dsp, Tsp, Ssp	Tedford *et al.*

		c-ene (<2.48 my)		1992
57	Seton Rock Shelter, Kangaroo Island	10 940 +/- 160 to 16 110 +/- 100	**Dm**, Dv/g?, Sh, sm	Hope *et al.* 1977
58	Victoria Fossil Cave	16 700 +/-3000 - 19 300 +/- 1690	**Dm**, Dv, Tc	Smith 1972; Wells *et al.* 1984
TASMANIA				
59	Beginner's Luck Cave & area	14 310 +/- 2970	**Dm**, Dv	Goede & Murray 1977; Murray *et al.* 1980
60	Cape Barren Is		**Dm**	Hope 1973
61	Cave Bay Cave & area	18550 +/- 600	Dv	Bowdler 1974
62	Flinders Is		**Dm**	Hope 1973
63	King Island		**Dm**	Hope 1973, Marshall & Hope 1973; Anderson 1914
64	Montague & Scotchtown Caves	20- 10 100 +/- 200	Dv, Sh, Thc, Tc	Goede *et al.* 1978; Murray & Goede 1977
65	Maxwell R.	22-18000	Dv, Sh	Allen *et al.* 1986
67	Pliesto-Scene Cave	10100 +/- 200	Sh, Tc	Murray & Goede 1977
68	6 Cave sites, S.w Tas	32-2500ya	Sh, Dv	Marshall 1992
69	Titan's Cave, Florentine Valley	Pliestocene	Dv (18), Sh (4)	Goede & Murray 1979
VICTORIA				
70	Boxlea	e. Pliocene (>4.06mya)	Po	Rich 1991
71	Buchan-Pyramids Cave	8 720+/-230 to 22980+/-2000 bp	**Dm**, Dv, Sl	Wakefield 1960, 1967a.
72	Buchan-Cloggs Cave	8 720+/-230 to 22980+/-2000 bp	Dv, Ssp, Tc	Flood 1974; Hope 1973 in Lundelius 1983
73	Bushfield,5m n. Warnambool	Holocene	**Dm**, Dv, Sh	Wakefield 1964
74	Byaduk Caves, 16m e. Heywood	Holocene	Dv	Wakefield 1964

75	cave 5mi s.e Gisborne	Holocene	**Dm**	Mahoney 1964
76	Dog Rocks-Batesford Quarry	>2.03mya	Dsp	Rich 1991
77	Dry Ck	25-40000 bp	Sl, Tc, Thc	
78	Duck Ponds	<1.66 mya	Dv, Thc	Wilkinson 1972
79	Fern cave,Lower Glenelg,10m s.Dartmoor subfossil	Holocene	**Dm**, Dv, Sh	Wakefield 1964
80	Forsyth's Bank	e. Pliocene	Gb	Rich 1991
81	Glenelg-McEacherns Cave	2800 +/- 80 to 28 580 +/-850 bp	Dv, Tc, Thc, **Dm**(15000 onwards)	Wakefield 1967b
82	Keilor	18000 +/-500 bp	Sl, Tc, Thc	Marshall 1974
83	Lake Colongulac	l. Pleistocene- m. Holocene	Dv, Thc, Tc	Gill 1951; Marshall 1974
84	Lancefield	1915 +/- 110 to 26600+/-650 bp	Tsp, Thsp, Ssp, Po	Gillespie *et al.* 1978
85	Limeburner's Point	0.9mya or 0.7 mya	Ssp1, Ssp2, Thc	Turnbull *et al.* 1992
86	Mt Hamilton, 22m wsw Skipton	subfossil	**Dm**, Dv, Sh	Wakefield 1964
87	Point Addis Oil Reserve	<10000 bp	**Dm**(sub)	
88	Natural Bridge, Mt Eccles, 11m s. Hamilton	subfossil	Dv	Wakefield 1964
89	New Guinea II cave	1100-9850 +/- 2800 bp	Dv, Sh, Tc,	Ossa *et al.* 1995
90	Smeaton	2.1 mya	Gb	Stirton 1957
91	Swains Cave,11m se Camperdown	subfossil	**Dm**, Dv	Wakefield 1964
92	Tower Hill Beach, 7m wnw Warnam	subfossil	**Dm**, Dv, Sh	Wakefield 1964
WESTERN AUSTRALIA				
93	Augusta-Skull Cave	2900+/-80 to 7875+/-100 bp.	Dg,, Sh	Porter 1979
94	Balladonia, Eucla Div		Sl, Tc	Glauert, 1910
95	Bremer Bay	approx. 1000 bp	Dg	Butler and Merrilees 1971
96	Cape Range	<40000 bp	Dh, Tc	Kendrick &

				Porter 1973
97	Devil's Lair and area(Witchcliffe)	320+/-80 to 35160 +/-1800 bp	Dg, Sh, Tsp, sm	Dortch & Merrilees 1971; Balme 1980
98	Hasting's Cave	7850 +/- 150 bp	Dg	Lundelius 1963, 1983
99	Horseshoe Cave, ne. Madura	15800 +/-1800 - 4500+/-330 bp	Dcf.g, Sh, Tc	Archer 1974a
100	Mammoth Cave	>37000bp	Dg, Sh, Tc, Thc	Merrilees 1967
101	Murray Cave, 40km n. Perth	3090 +/-90 bp	Dg, Sh, Tc	Archer 1974a
102	Nullabor-Madura Cave	18990+/-220 - 37880+/-3520 bp	Dg, Sh, Tc	
103	Nullabor-Caves area	Pleistocene	Dg, Sh	Lundelius 1963
104	Null - Murraelelleven Cave	3280 +/- 90 bp	Tc, Dg, Sh	Lundelius 1963, 1983; Partridge 1967
105	Nullabor-Webb's Cave		Dg, Sh	Lundelius 1963, 1983
106	Null - Abrakurrie		Dg	Lundelius 1963
107	Null - Snake Pit		Dg	Lundelius 1963
108	Orchestra Shell Cave	4520bp	Dg	Archer 1974b
109	Strong's Cave	l. Pliestocene	Ssp	Merrilees 1979
110	Tunnell Ck Carnivore Lair,Kimb	Quaternary	Dh, Tc	Archer 1974a
111	Wedge's Cave	l. Pliestocene	Dg, Sh	Lundelius 1963, 1983
NORTHERN TERRITORY				
112	Padypadiy, nr Oenpelli	<3120 +/- 100 bp	Sh	Calaby & White 1966

Note.

[A]. Ages are displayed as either years bp, or as Epochs. The prefexes to Epoch names in the Age column; "e", "m", "l", refer to early, mid, late respectively. Blank cells are undatable.

[B]. Key to species codes: Dsp, *Dasyurus* sp; Da, *D. albopunctatus*; Dd, *D. dunmalli*; Dg, *D. geoffroii*; D.h, *D. hallucatus*; Dm, *D. maculatus*; Dv, *D. viverinus*; Gb, *Glaucodon ballaratensis*; Psp, *Propleopus* sp; Pc, *P. chillagoensis*, Pw, *P. wellingtonensis*, Po, *P. oscillans* Ssp, *Sarcophilus* sp, Sm, *S. moornaensis*; Sl, *S. laniarus*; Sh, *S. harrisi*; Tsp, *Thylacinus* sp; Tc, *T. cynocephalus*, Tp, *T. potens*; Thsp, *Thylacoleo* sp, Thc, *T. carnifex*; Thh, *T. hillii*.

Appendix 5.1. Sources used in compiling life-history data, (Figs 5.7-5.9 and Appendix 5.3.).

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Appendix 5.2. Table of fixed parameters used in Vortex calculations for production of Fig. 5.10.

All values listed were kept constant for all twenty-four combinations of population size and longevity. Longevity values used include 1,2,3,4,5, and 6 years. Population sizes used were 50, 100, 150 and 250 individual adults of each sex. All demographic values calculated from this study. See Lacy *et al.* (1993) for an explanation of terms.

Population characteristic	**Value**
Simulation repeated	100
Simulation run	100 years
Migration?	0
Sex ratio at birth?	1:1
Maximum number of young/litter?	6
Incorporate inbreeding depression?	N
EV (rep'n) correlated with EV(survival)?	N
How many catastrophes?	0
Monogamous or polygynous breeding?	P
At what age females begin breeding?	1 year
Are good years for reproduction good years for survival?	N
% females breeding?	88
% breeding at k?	88
Exponential steepness, B?	2 (default)
Allee parameter, A?	1 (default)
Of females which breed, what % produce,	
litter size	
1?	0
2?	4
3?	0
4?	20
5?	24
6?	44
What is SD in % producing litters?	13.4
Mortality of females;	
age 0 to 1	70%
SD in above	default
age 1 to 2	50%
SD in above	default
annual adult mortality	34%
SD in above	default
Mortality of males	
age 0 to 1	70%
SD in above	default
age 1 to 2	50%
SD in above	default

annual adult mortality	59%
SD in above	default
All adult males in breeding pool?	N
Start at stable age distribution?	Y
Carrying capacity?	as per population size
Trend in k predicted?	N
Harvest?	N
Supplement?	N

Appendix 5.3. Species used in life-history comparisons and the values used for five life-history parameters.

Taxon	W[1] (g)	L[2] (years)	F[3]	RF[4]	M[5] (months)
ORDER CARNIVORA					
Family Canidae					
Urocyon littoralis	2722	5		0.43	12
Vulpes macrotis	2200	12	5	0.92	12
V. velox	2270	12.8	6	0.72	12
Fennecus zerda	1500	14.6	5		11
Family Mustelidae					
Martes americana	850	17	5	0.58	15
M. foina	2300	18	8	0.44	
M. martes	1800	17	8	0.48	24
M. pennanti	3200	10	6	0.5	12
M. zibellina	1560	15	5	0.6	15
Mustela lutreola	440	10	7	0.64	12
M. nigripes	800	12	6	0.58	12
M. nivalis		10	12	0.78	3
M. vison	1100	10	10	0.5	12
Family Herpestidae					
Herpestes auropunctatus	662	10	5	0.4	
H. pulverulentus	1250	8.7			
Suricatta suricatta	969	10			12
Bdeogale nigripes	3000	15.9			
Cynictis penicillata	797	15.1			
Crossarchus obscurus	1450	9	12	0.4	9
Helogale parvula	680	11	21	0.57	43
Galidia elegans	900	13.1			34
Family Procyonidae					
Bassariscus astutus	1338	14.3	5	0.5	10
Potos flavus	1700	15	1		18
Nasua nasua	3500			0.8	
Family Viverridae					
Genetta genetta	3000	13	4		48
Nandinia binotata	2100	16		0.5	36
Prionodon linsang		10.6			
Poiana richardsoni	1000	5	6		
Viverricula indica	4000	10.5			
Macrogalidia musschenbroeki	2200	12	12	0.65	10
Arctogalidia trivitgata	2500	15.9	6		
Fossa fossana	1500	11			24
ORDER DASYUROMORPHIA					

Family Dasyuridae					
Dasyurus albopuncatus	700	3			12
D. hallucatus	500		8	0.8	12
D. geofroyi	1285	5	6		12
D. maculatus (nth Qld)	1600		6	0.88	12
D. maculatus (sth Aust)	4000	6	6	0.83	12
D. viverrinus	1100	6	6	0.82	12
ORDER DIDELPHIMORPHIA					
Family Didelphidae					
Caluromys derbianus				0.75	7
Chironectes minimus	790	2.9		0.93	
Lutreolina crassicaudatus	540	3		0.85	
Metachirus nudicaudatus	800	4	18		12
ORDER DIPROTODONTA					
Family Petauridae					
Petaurus breviceps	135	14	4	0.8	15
P. norfolcensis	260	11.9	4	0.75	
P. australis	700	10	1	0.5	
Gymnobelideus leadbeateri	166	10	6	0.75	15
Family Phalangeridae					
Phalanger maculatus	3600	11			8
Trichosurus vulpecula	3500	14.7	2	0.54	12
T. caninus	4000	17	1	0.54	24
Family Potoroidae					
Potorous tridactylus	1350	12	3	1	12
Bettongia penicillata	1600	8	3	1	6
B. gaimardi	2250	11.9	3	0.52	9
Aepyprymnus rufescens	3500	8	3	0.54	8
P. longipes	1800	10	3	1	
ORDER INSECTIVORA					
Family Erinacae					
Echinosorex gymnurus	2000	5.4	4	0.95	
Erinaceus europeus	1100	7	14		
Family Solenodontidae					
Solenodon paradoxurus	1000	11.3	6		
Family Tenrecidae					
Tenrec eucaudatus	2400	6.3	32		
ORDER PERAMELEMORPHIA					
Family Peramelidae					
Perameles gunni	900	3	20	0.44	3
Macrotis lagotis	1100	7.1			
Isoodon macrourus	1700	3	21	0.47	4

ORDER PRIMATES					
Family Lemuridae					
Hapalemur griseus	**2500**	**18.7**	**2**		**18**
Varecia variegata	**4500**	**19**	**3**		**2**
Lepilemur leucopus	**4200**	**8.6**	**1**		**2**
ORDER RODENTIA					
Family Sciuridae					
Cynomys ludoricianus	**1400**	**8.5**	**10**	**0.44**	
Xerus inaurus	**945**	**6**	**3**	**0.68**	**12**
Ratufa indica	**3000**	**20**	**6**	**0.5**	
Protoxerus stangeri	**700**	**15**	**4**	**0.38**	
Petaurista alborufus	**2500**	**15**			
ORDER XENARTHRA					
Family Dasypodidae					
Chaetophractus villosus	**2000**	**20**	**4**	**0.81**	**9**
Zaedyus pichiy	**2000**	**9**			**9**
Tolypeutes matacus	**1590**	**15**	**1**		**9**

Note.

1. W, average weight attained by females.
2. L, longevity in captivity.
3. F, annual fecundity which is the potential maximum number of young which a species is able to produce in a year
4. RF, realised fecundity refers to the mean observed litter size/maximum observed litter size for those species have a maximum potential litter size of 6 or more (6 being the maximum size of *Dasyurus* litters).

M, age at maturity refers to the age at which females first produce litters.

Appendix 6.1. Diet of the Spot-tailed Quoll, D. maculatus in north Queensland.

Prey species frequencies (f) and percentage occurrence in all prey items (%) for each of the biogeographic regions from which scats of *D. maculatus* were collected. W, Windsor Uplands; Le , Lewis Rd, Carbine Uplands; La, Lamb Uplands; Bk, Bellenden Ker Uplands; Bf, Bartle Frere Uplands; Sju, South Johnstone Uplands; Koom, Koombooloomba Uplands (see Map 9.1 for locations of transects).

	W[3]		Le		La		Bk		Bf		SJU		Koom		TOTAL	
	F[1]	%[2]	*F*	%	F	%	F	%	F	%	F	%	F	%	F	%
PREY SPECIES																
Small terrestrial																
Rattus fuscipes	130	11.6	5	3.5	2	1.8	6	18.2	6	20.7	4	5.7	0	0	**153**	10.2
Rattus leucopus	38	3.2	1	0.7	1	0.9	1	3	1	3.4	1	1.4	0	0	**43**	2.7
Total Small Terrestrial	**168**	**14.3**	**6**	**4.2**	**4**	**3.6**	**7**	**21**	**7**	**24.1**	**5**	**7**	**0**	**0**	**196**	**13.2**
Small Scansorial																
Antechinus flavipes	1	0.1	0	0	0	0	1	2.3	0	0	0	0	0	0	**2**	0.1
Melomys cervinipes	288	24.5	29	20.4	12	10.9	4	12.1	2	6.8	4	5.6	1	5.8	**340**	21.9
Pogonomys mollipilosus	7	0.6	0	0	0	0	0	0	0	0	0	0	1	5.8	**8**	0.5
Uromys hadrourus	0	0	0	0	0	0	3	9.1	6	20.7	0	0	0	0	**9**	0.6
Total Small Scansorial	**296**	**25.2**	**29**	**20.4**	**12**	**10.9**	**8**	**24.2**	**8**	**27.5**	**4**	**5.6**	**2**	**11.7**	**359**	**23.1**
Small Arboreal																
Cercatetus caudatus	4	0.3	0	0	0	0	0	0	1	3.4	0	0	0	0	**5**	0.3
Total Small Arboreal	**4**	**0.3**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**3.4**	**0**	**0**	**0**	**0**	**5**	**0.3**

TOTAL SMALL MAMMAL	**468**	**40.1**	**35**	**24.6**	**16**	**14.5**	**15**	**47.5**	**16**	**48**	**9**	**12.6**	**2**	**21.4**	**560**	**35.8**
Medium Terrestrial																
Ornithorhynchus anatinus	5	0.4	0	0	1	0.9	0	0	0	0	0	0	0	0	**6**	0.4
Perameles nasuta	132	11.2	23	16.2	5	4.5	2	6.9	2	6.8	18	25.4	3	17.6	**185**	11.9
Hypsiprymnodon moschatus	121	10.3	15	10.6	28	25.5	0	0	5	17.2	18	25.4	1	5.8	**188**	12.2
Hydromys chrysogaster	1	0.1	0	0	0	0	0	0	0	0	0	0	0	0	**1**	0.1
Total Medium Terrestrial	**259**	**22**	**38**	**26.8**	**33**	**30**	**2**	**6.1**	**7**	**24**	**36**	**50.7**	**5**	**29.4**	**380**	**23.8**
Medium Scansorial																
Uromys caudimaculatus	45	3.8	10	7.0	2	1.8	1	2.3	0	0	2	2.8	0	0	**60**	3.7
Dasyurus maculatus	0	0	1	0.7	0	0	0	0	0	0	0	0	0	0	**1**	0.1
Total Medium Scansorial	**45**	**3.8**	**11**	**7.7**	**2**	**1.8**	**1**	**3**	**0**	**0**	**2**	**2.8**	**0**	**0**	**61**	**3.7**
Medium Arboreal																
Dactylopsila trivirgata	10	0.8	2	1.4	0	0	0	0	0	0	1	1.4	0	0	**13**	0.7
Pseudochirulus cinereus	175	14.9	24	16.9	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	**199**	12.8
Pseudochirulus herbertensis	n/a	n/a	n/a	n/a	36	32.7	10	30.3	1	3.4	1	1.4	0	0	**48**	3.2

Pseudocheirus peregrinus	**1**	**0.1**	2	1.4	0	0	0	0	0	0	0	0	0	0	**2**	0.1
Pseudocheirus sp.	2	0.2	0	0	0	0	0	0	0	0	0	0	0	0	**3**	0.1
Pseudochirops archeri	18	1.5	18	12.7	1	0.9	0	0	0	0	1	1.4	1	5.8	**39**	2.5
Pteropus sp	0	0	0	0	2	1.8	1	3	0	0	0	0	0	0	**3**	0.2
Total Medium Arboreal	**212**	**18**	**46**	**32.4**	**42**	**38.2**	**11**	**33.3**	**1**	**3.5**	**3**	**4.2**	**4**	**23.5**	**320**	**20.5**
TOTAL MEDIUM MAMMAL	**516**	**44.3**	**95**	**66.9**	**77**	**70**	**14**	**41.2**	**8**	**32**	**41**	**57.7**	**9**	**0.52**	**753**	**48.3**
Large Terrestrial																
Isoodon macrourus	3	0.3	0	0	0	0	0	0	0	0	0	0	1	5.8	**4**	0.3
Tachyglossus aculeatus	1	0.1	2	1.4	0	0	0	0	0	0	0	0	0	0	**3**	0.2
Thylogale stigmatica	42	3.6	2	1.4	9	8.2	0	0	0	0	1	1.4	0	0	**53**	3.4
Wallabia bicolor	1	0.1	0	0	0	0	0	0	0	0	0	0	0	0	**1**	0.1
Unidentified Macropod	1	0.1	0	0	0	0	0	0	0	0	0	0	0	0	**1**	0.1
Canis familiaris	1	0.1	0	0	0	0	0	0	0	0	1	1.4	0	0	**2**	0.1
Sus scrofa	0	0	2	1.4	0	0	0	0	0	0	0	0	0	0	**2**	0.1
Total Large Terrestrial	**49**	**4.2**	**6**	**4.2**	**9**	**8.2**	**0**	**0**	**0**	**0**	**2**	**2.8**	**0**	**0**	**66**	**4.1**
Large Scansorial																
Trichosurus vulpecula	2	0.2	0	0	0	0	0	0	0	0	0	0	2	11.8	**4**	0.3
Dendrolagus bennettianus	1	0.1	0	0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	**1**	0.1

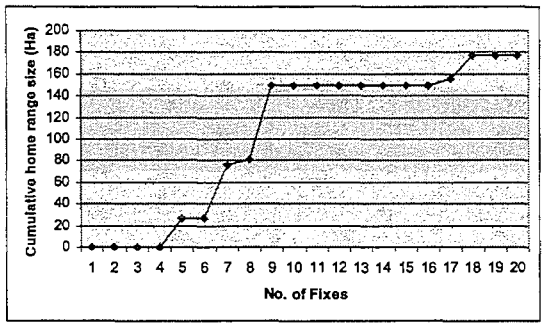
D. lumholtzi	n/a	n/a	0	0	1	0.9	0	0	0	0	1	1.4	1	5.8	**3**	0.2
Total Large Scansorial	**3**	**0.3**	**0**	**0**	**1**	**1**	**0**	**0**	**0**	**0**	**1**	**1.4**	**3**	**17.6**	**8**	**0.5**
TOTAL LARGE MAMMAL	**52**	**4.4**	**6**	**4.2**	**10**	**9**	**0**	**0**	**0**	**0**	**3**	**4.2**	**3**	**21**	**74**	**4.7**
Insecta	56	4.7	3	2.1	0	0	1	3	0	0	10	14.1	0	0	**70**	4.2
Reptile	31	2.6	0	0	2	1.8	0	0	1	3.4	0	0	2	11.8	**36**	2.2
Bird	43	3.7	3	2.1	5	4.5	3	9.1	4	13.8	7	9.8	1	5.8	**66**	3.9
TOTAL NON-MAMMALIAN	**130**	**11.1**	**6**	**4.3**	**7**	**6.4**	**4**	**12.9**	**5**	**20**	**17**	**24.2**	**3**	**6**	**172**	**10.5**
TOTAL NUMBER OF PREY RECORDS	**1166**		**142**		**110**		**33**		**29**		**71**		**17**		**1568**	
Total No. scats analysed	**986**		**129**		**94**		**26**		**19**		**49**		**7**		**1310**	

Appendix 6.2 . The diets of male and female D. maculatus on the Windsor Tableland, north Queensland.

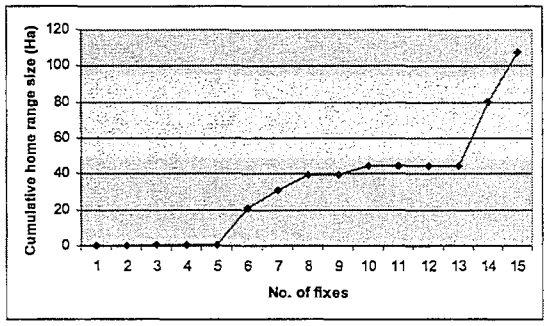
n refers to the number of occurrences of each prey species and p refers to the proportion of all occurrences which each prey species represents.

Prey species	**Male**		**Female**	
No. scats	27		30	
	n[1]	p[2]	n[1]	p[2]
Rattus spp	6	15	7	21
M. cervinipes	8	21	1	3
P. mollipilosus	0	0	1	3
P. breviceps	0	0	1	3
D. trivirgata	2	5	0	0
P. nasuta	3	8	3	9
H. moschatus	3	8	2	6
U. caudimaculatus	5	13	0	0
H. lemuroides	1	3	2	6
P. cinereus	3	8	4	12
P. archeri	0	0	1	3
P. peregrinus	0	0	1	3
T. stigmatica	3	8	0	0
Total Mammal	**34**	**89**	**23**	**66**
Bird	3	8	3	9
Reptile	0	0	3	9
Insect	1	3	5	15
Total non-mammal	**4**	**11**	**11**	**33**
Total	**38**		**34**	

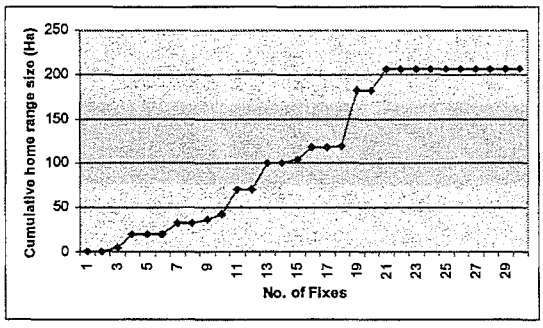
Appendix 7.1. The cumulative home range sizes for six female Spot-tailed Quolls radio-tracked on the Windsor Tableland.



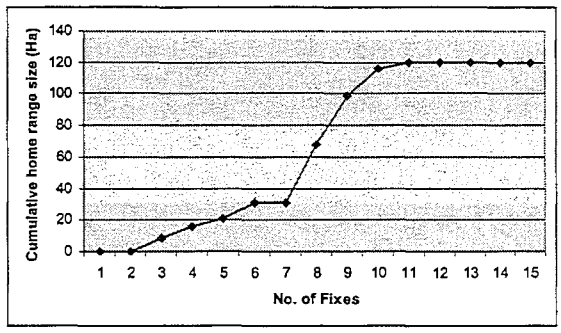
Female 1.



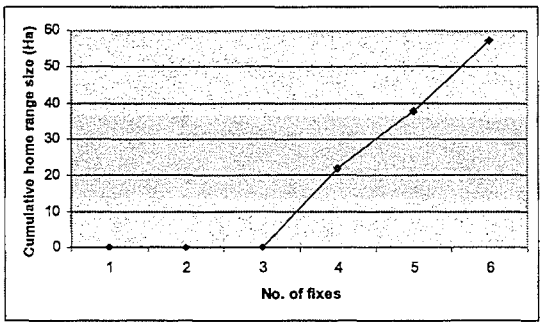
Female 4



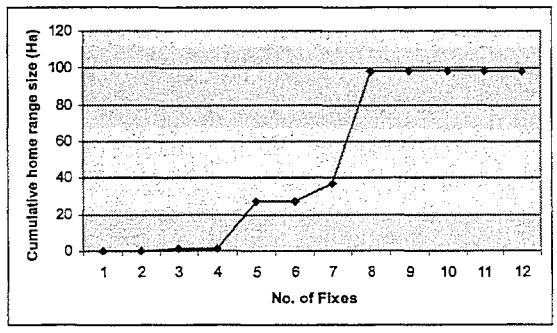
Female 2



Female 5



Female 3



Female 6

Appendix 8.1. The criteria for Critically Endangered, Endangered and Vulnerable wildlife (IUCN 2000)

CRITICALLY ENDANGERED (CR)

A taxon is Critically Endangered when it is facing an extremely high risk of extinction in the wild in the immediate future, as defined by any of the following criteria (A to E):

A) Population reduction in the form of either of the following:

1) An observed, estimated, inferred or suspected reduction of at least 80% over the last 10 years or three generations, whichever is the longer, based on (and specifying) any of the following:

a) direct observation
b) an index of abundance appropriate for the taxon
c) a decline in area of occupancy, extent of occurrence and/or quality of habitat
d) actual or potential levels of exploitation
e) the effects of introduced taxa, hybridisation, pathogens, pollutants, competitors or parasites.

2) A reduction of at least 80%, projected or suspected to be met within the next 10 years or three generations, whichever is the longer, based on (and specifying) any of (b), (c), (d) or (e) above.

B) Extent of occurrence estimated to be less than 100 km^2 or area of occupancy estimated to be less than 10 km^2, and estimates indicating any two of the following:

1) Severely fragmented or known to exist at only a single location.

2) Continuing decline, observed, inferred or projected, in any of the following:

a) extent of occurrence
b) area of occupancy
c) area, extent and/or quality of habitat
d) number of locations or subpopulations
e) number of mature individuals

3) Extreme fluctuations in any of the following:

a) extent of occurrence
b) area of occupancy
c) number of locations or subpopulations
d) number of mature individuals

C) Population estimated to number less than 250 mature individuals and either:

1) An estimated continuing decline of at least 25% within three years or one generation, whichever is longer or

2) A continuing decline, observed, projected, or inferred, in numbers of mature individuals and population structure in the form of either:

a) severely fragmented (i.e. no subpopulation estimated to contain more than 50 mature individuals)
b) all individuals are in a single subpopulation

D) Population estimated to number less than 50 mature individuals.

E) Quantitative analysis showing the probability of extinction in the wild is at least 50% within 10 years or three generations, whichever is the longer.

ENDANGERED (EN)

A taxon is Endangered when it is not Critically Endangered but is facing a very high risk of extinction in the wild in the near future, as defined by any of the following criteria (A to E):

A) Population reduction in the form of either of the following:

1) An observed, estimated, inferred or suspected reduction of at least 50% over the last 10 years or three generations, whichever is the longer, based on (and specifying) any of the following:
   a) direct observation
   b) an index of abundance appropriate for the taxon
   c) a decline in area of occupancy, extent of occurrence and/or quality of habitat
   d) actual or potential levels of exploitation
   e) the effects of introduced taxa, hybridisation, pathogens, pollutants, competitors or parasites.

2) A reduction of at least 50%, projected or suspected to be met within the next 10 years or three generations, whichever is the longer, based on (and specifying) any of (b), (c), (d), or (e) above.

B) Extent of occurrence estimated to be less than 5000 km^2 or area of occupancy estimated to be less than 500 km^2, and estimates indicating any two of the following:

1) Severely fragmented or known to exist at no more than five locations.

2) Continuing decline, inferred, observed or projected, in any of the following:
   a) extent of occurrence
   b) area of occupancy
   c) area, extent and/or quality of habitat
   d) number of locations or subpopulations
   e) number of mature individuals

3) Extreme fluctuations in any of the following:
   a) extent of occurrence
   b) area of occupancy
   c) number of locations or subpopulations
   d) number of mature individuals

C) Population estimated to number less than 2500 mature individuals and either:

1) An estimated continuing decline of at least 20% within five years or two generations, whichever isl onger, or

2) A continuing decline, observed, projected, or inferred, in numbers of mature individuals and population structure in the form of either:
   a) severely fragmented (i.e. no subpopulation estimated to contain more than 250 mature individuals)
   b) all individuals are in a single subpopulation.

D) Population estimated to number less than 250 mature individuals.

E) Quantitative analysis showing the probability of extinction in the wild is at least 20% within 20 years or five generations, whichever is the longer.

VULNERABLE (VU)

A taxon is Vulnerable when it is not Critically Endangered or Endangered but is facing a high risk of extinction in the wild in the medium-term future, as defined by any of the following criteria (A to E):

A) Population reduction in the form of either of the following:

1) An observed, estimated, inferred or suspected reduction of at least 20% over the last 10 years or three generations, whichever is the longer, based on (and specifying) any of the following:
   a) direct observation
   b) an index of abundance appropriate for the taxon
   c) a decline in area of occupancy, extent of occurrence and/or quality of habitat
   d) actual or potential levels of exploitation
   e) the effects of introduced taxa, hybridisation, pathogens, pollutants, competitors or parasites.

2) A reduction of at least 20%, projected or suspected to be met within the next ten years or three generations, whichever is the longer, based on (and specifying) any of (b), (c), (d) or (e) above.

B) Extent of occurrence estimated to be less than 20,000 km^2 or area of occupancy estimated to be less than 2000 km^2, and estimates indicating any two of the following:

1) Severely fragmented or known to exist at no more than ten locations.

2) Continuing decline, inferred, observed or projected, in any of the following:
   a) extent of occurrence
   b) area of occupancy
   c) area, extent and/or quality of habitaty
   d) number of locations or subpopulations
   e) number of mature individuals

3) Extreme fluctuations in any of the following:
   a) extent of occurrence
   b) area of occupancy
   c) number of locations or subpopulations
   d) number of mature individuals

C) Population estimated to number less than 10,000 mature individuals and either:

1) An estimated continuing decline of at least 10% within 10 years or three generations, whichever is longer, or

2) A continuing decline, observed, projected, or inferred, in numbers of mature individuals and population structure in the form of either:
   a) severely fragmented (i.e. no subpopulation estimated to contain more than 1000 mature individuals)
   b) all individuals are in a single subpopulation

D) Population very small or restricted in the form of either of the following:

1) Population estimated to number less than 1000 mature individuals.

2) Population is characterised by an acute restriction in its area of occupancy (typically less than 100km^2) or in the number of locations (typically less than five). Such a taxon would thus be prone to the effects of human activities (or stochastic events whose impact is increased by human activities) within a very short period of time in an unforeseeable future, and is thus capable of becoming Critically Endangered or even Extinct in a very short period.

E) Quantitative analysis showing the probability of extinction in the wild is at least 10% within 100 years.

Appendix 8.2. Sightings and associated information of of the Spot-tailed Quoll Dasyurus maculatus in north Queensland1.

No.	Decimal Latitude	Decimal Longitude	Precision (m)	Location	Source[2,3]	Source type	Year	Month	Day
1	-17.6	145.48	25000	Ravenshoe, Atherton Tableland	M18348	Museum	1935	7	
2	-17.6	145.48	25000	Ravenshoe, Atherton Tableland	M18781	Museum	1935	6	
3	-17.52	145.62	25000	Millaa Millaa, Atherton Tableland	M6637	Museum	1939	6	
4	-17.613	145.7911	2000	Palmerston Highway, Crawford's Lookout	Morris	Untrained	1994		
5	-17.4916	145.6916	2000	N. Johnstone R Gorge	Bernie Hyland	Biologist	1974	12	
6	-17.5792	145.7033	1800	Miyee Ck, 12.25km s.w Millaa Millaa	Dave Bender	Untrained	1984	8	21
7	-17.38	145.73	5000	Gourke Track	Andrew Dennis/B. Triggs	Biologist	1990	5	6
8	-17.38	145.73	5000	Gourke Track	Andrew Dennis/B. Triggs	Biologist	1991	7	30
9	-17.38	145.73	5000	Gourke Track	Andrew Dennis/B. Triggs	Biologist	1992	8	5
10	-17.5194	145.6383	300	Palmertson H'way, 4km S Millaa Millaa	Steve Comport	Biologist	1987	4	
11	-17.5333	145.6083	300	Pat Daley Park, Millaa Millaa	Karl Vernes	Biologist	1991	12	8
12	-17.3750	145.7083	300	Mingara Homestead	Andrew Dennis/Barbara Triggs	Biologist	1992	7	
13	-17.6081081	145.6	5000	Maalan, Atherton Tableland selection 538	Frawley (1987)	Published	1950's		
14	-17.6077	145.7577	5000	Maalan, Atherton Tableland	JM2079	Museum	1971	5	
15	-17.6042	145.5542	900	Massey Ck, old Palmerston H'way.	John Winter	Biologist	1985		
16	-17.5961	145.5375	900	Glenn Denning Rd, Atherton Tableland	Ray Scats	Untrained	1992	12	
17	-17.2648648	145.8523809	300	Mt Bellenden Ker, Main summit	Mike McGuire	Untrained	1965		
18	-17.3819	145.7839	3000	Bartle Frere walking track	Ben Collins	Biologist	1996	7	8
19	-17.375	145.7916	900	Mt Bartle Frere, north-west peak	Sam Dansie	Biologist	1975		
20	-17.2648648	145.8523809	300	Mt. Bellenden Ker	Ramsay (1888)	Published	1888	2	
21	-17.2648648	145.8523809	300	Mt. Bellenden Ker, Main summit	John Winter	Biologist	1975	11	3
22	-17.2648648	145.8523809	300	Mt. Bellenden Ker, Main summit	John Winter	Biologist	1971-73		
23	-17.2648648	145.8523809	300	Mt. Bellenden Ker	John Winter	Biologist	1974	10	24
24	-16.1333	145.2833	54000	Daintree River	Museum of Victoria	Museum	1908	5	5
25	-16.5428571	145.2857142	900	Mt Lewis Road, Mary Ck	Rupert Russell	Biologist	1981	12	19

26	-16.5942	145.275	900	Mt Lewis Rd	Keith MacDonald	Biologist			
27	-16.5216	145.2505	900	Mt Lewis Rd, Burton's Ridge	Rupert Russell	Biologist	1991		
28	-16.4383	145.2527	900	Pauls Luck area, Carbine Tableland	Jamie Seymour	Biologist	1989	12	31
29	-16.4383	145.2527	900	Pauls Luck area, Carbine Tableland	Jamie Seymour	Biologist	1989	12	31
30	-16.5216	145.2505	900	Mt. Lewis Rd	Jack Hasenpusch	Biologist	1987	2	
31	-16.4583	145.2555	900	Doolin's Creek, Carbine Tableland	Jamie Seymour	Biologist	1990	1	3
32	-16.4333	145.2	900	Roots Mt., Carbine Tableland	JM1863	Museum	1974		
33	-15.7166	145.2769	10000	Big Tableland	Leffy Bauman	Untrained	1960's		
34	-15.4666	145.25	54000	Cooktown	M8129	Museum	1960		
35	-15.4666	145.25	54000	Cooktown	M1560	Museum	1901	7	18
36			5000	Tully Falls Rd, Atherton Tablelands	Morris	Untrained			
37	-17.8666	145.6	5000	Koombooloomba Ck	AMNH	Museum	1959		
38	-17.8666	145.6	5000	Koombooloomba Ck	AMNH	Museum	1959		
39	-17.7603	145.5444	500	Tully Falls Rd, Atherton Tablelands	QFS	Biologist	1994	12	15
40	-17.9247747	145.631999	3000	Costigan Ck Forestry Camp	Lloyd Jones	Untrained	1970's		
41	-18.2666	146.0166	25000	near Cardwell	C6141	Museum	1918	11	20
42	-17.11	145.6139	900	Kalorama Rocks, Lamb Range	Mike Trennery	Biologist			
43	-16.985	145.6311	900	High point of Davies Ck/Copperlode Dam Rd	Rob Whiston	Biologist			
44	-17.0936	145.6231	300	Summit of Mt Edith	Brad Law	Biologist			
45	-17.0422	145.6147	300	upper Davies Creek, Lamb Range	Steve Comport	Biologist	1995		
46	-16.85	145.6	3000	Kuranda/Mareeba Rd, Speewah	John Winter	Biologist	1988		
47	-16.85	145.6	3000	Speewah	Darren Storch	Biologist	1992		
48	-16.85	145.6	3000	Speewah	Marreba Butcher	Untrained	1990		
49	-17.6544	145.7147	300	South Johnstone Forestry camp	Alan Stegar	Untrained			
50	-17.5911	145.7042	300	Palmerston H'way, near Maalan Road turnoff	John Winter	Biologist			
51	-17.7542	145.6466	900	H-Track-300m	Scott Burnett	Biologist			
52	-17.6086	145.775	900	K-Tree, Palmerston National Park	Murray Fatur	Untrained	1962		
53	-17.6131	145.7911	900	Palmertson H'way	Mike Trennery	Biologist	1994	10	
54	-17.6131	145.7911	900	Palmertson H'way	Mike Trennery	Biologist	1994	10	
55	-17.625	145.7361	300	Downey Creek	Mike Trennery	Biologist	1992	11	3

56	-17.5666	145.6666	900	Beatrice R. Palmerston H'way	JM7042	Museum	1989	3	16
57	-17.5666	145.6666	900	McHugh Bridge, Palmerston H'way	Paul Minter	Biologist	1990		
58	-17.5666	145.6666	900	Palmertson H'way near McHugh Bridge	Leone Smith	Untrained	1993	2	
59	-17.6833	145.6666	900	Charappa Forestry Camp, Atherton Tableland	Matt Newport	Untrained	1983		
60	-17.6833	145.6666	300	Charappa Forestry Camp	Alan Stegar	Untrained	1965		
61	-19.0	146.2	9000	Paluma	AMNH	Museum	1920		
62	-19.009009	146.2104761	900	Paluma	Tom Conner	Untrained	1940's		
63	-16.1083	145.4555	300	Coconut Beach Resort	Rupert Russell	Biologist	1992		
64	-16.1333	145.4527	300	Noah Beach Camp Ground, Cape Tribulation	Rupert Russell	Biologist	1992		
65	-16.1666	145.4111	900	Cooper Creek, Cape Tribulation	Rupert Russell	Biologist	1992	4	21
66	-16.2361	145.4166	900	Bailey Ck Rd, Cape Tribulation.	Rupert Russell	Biologist	1992		
67	-16.0861	145.4527	900	Nth. Mayal Ck, Cape Tribulation	Rupert Russell	Biologist	1992		
68	-16.1833	145.4097	300	Turpentine Rd, Cape Tribulation	Rupert Russell	Biologist	1992		
69	-16.1292	145.4542	300	Noah Head, Cape Tribulation	Peter Stanton	Biologist	1992	6	2
70	-16.1708	145.3625	300	Hilda Creek, 1.5km s.e. Thornton's Peak	Rupert Russell	Biologist	1989	10	22
71	-16.2869	145.0888	300	Windsor Tableland	Mike Trennery	Biologist	1989		
72	-16.2333333	145.0658	300	Bargoo Ck, Windsor Tableland	Mike Trennery	Biologist	1988		
73	-16.2333	145.0166	900	Windsor Tableland	JM 10073	Museum	1974		
74	-16.2594	145.0388	300	Windsor Tableland near river (Bowerbird Creek)	QFS	Biologist	1993	5	16
75	-16.2166	145.0666	900	Windsor Tableland	CSIRO collection	Museum	1985		
76	-16.24	145.0658	300	Windsor Tableland, B-Road	Tim Hawkes	Biologist	1994	9	12
77	-16.275	145.0577	300	Windsor Tableland	John Winter	Biologist	1977	7	19
78	-16.2792	145.0625	300	Below "Cassells Head", Windsor Tableland	Dick Whitford	Biologist	1990	9	22
79	-16.2792	145.0625	300	Windsor Tableland, Cassells Head	Tim Hawkes	Biologist	1994	9	11
80	-16.2058	144.9764	900	Windsor Tableland	John Winter	Biologist	1991	11	
81	-16.2058	144.9764	300	Windsor Tableland, Mann-Jones' hut	Red	Untrained	1992	9	
82	-16.2339	145.0097	300	Windsor Tableland	Darren Storch	Biologist	1992	3	16
83	-	145.26666666666	3600	Foot of Mt Finnigan	Semon (1899) McFarland	Published	1892	6	

	15.7666666666667	7							
84	-17.2648648	145.8523809	900	Mt. Bellenden Ker	Australia. Mus (McFarland)	Museum			
85	-17.6	145.48333	1800	Ravenshoe	AMNH (McFarland)	Museum	1922		
86	-17.6	145.48333	1800	Ravenshoe	AMNH (McFarland)	Museum	1921		
87	-17.26666667	145.48333	3600	Atherton Tablelands	AMNH (McFarland)	Museum	1943		
88	-17.26666667	145.48333	3600	Atherton Tablelands	AMNH (McFarland)	Museum	1951		
89	-16.43333333	145.2	900	Mt Spurgeon	AMNH	Museum	1937		
90	-16.1394444	145.44	450	Daintree, Oliver Ck causeway, Cape Trib. Road	Qld Museum	Museum	1997	10	10
91	-17.2666667	145.483333	3600	Atherton Tablelands	NMNH (Watt 1993)	Museum	1921		
92	-17.5	145.45	900	Evelyn	AMNH (Watt 1993)	Museum	1922		
93	-16.2625	145.0405555	900	Windsor Plateau, near River	DPI Permit to collect - J. Barnett	Biologist	1995	5	13
94	-18.35	145.8875	12000	coast mountains plateau nr Herbert Vale	Lumholtz (1889)	Published	1882		
95	-15.466667	145.25	1800	Cooktown	MCZ (Watt 1993)	Museum	1947		
96	-18.4666667	145.8583333	7200	near Herbert Vale	Collett (1887)	Published	1882	12	
97	-16.9166667	145.766667	3600	Cairns	Museum of Victoria (Watt 1993)	Museum	1970		
98	-16.2611111	145.0402778	900	Spencer Creek, Causeway Barracks, Windsor Tablelan	QM	Museum	1994	7	6
99	-16.2333333	145.0166667	900	Windsor Tableland	QM	Museum	1992	4	1
100	-16.4333333	145.2	900	Mt Spurgeon	QM	Museum			
101	-17.45	145.4722	500	Longlands Gap, Atherton Tableland	Jonathon Munro	Biologist	2001	5	17
102	-16.505	145.267771	300	Mt Lewis Rd, c. 1km past top hut	Cape York Herp. Soc.	Biologist	2000	2	12
103	-17.1761	145.6373	300	Danbulla Forest Drive	A & A Freeman	Biologist	2000	1	21
104	-17.3491633	145.728055	900	"Caribou", Lamins Hill, Atherton Tableland	Errol Flynn	Untrained	1998	10	13
105	-17.6	145.48333	1800	Ravenshoe, Atherton Tablelands	NMNH (Watt 1993)	Museum	1921		
106	-17.6	145.48333	1800	Ravenshoe, Atherton Tablelands	NMNH (Watt 1993)	Museum	1921		
107	-17.6	145.48333	1800	Ravenshoe, Atherton Tablelands	NMNH (Watt 1993)	Museum	1921		
108	-17.391036	145.6666	2000	Glen Allyn, Atherton Tablelands	Short (1988)	Published	1910's		
109	-17.4004504	145.8176183	3000	Mt Bartle Frere	Peter Stanton	Biologist	1992	6	28

110	-16.5337837	145.2871425	6000	Mt Lewis Rd	John Grant	Biologist			
111	-16.5337837	145.2871425	6000	Mt Lewis Rd	Frank Little senior	Biologist	1950's		
112	-16.4432432	145.200204	1000	Mt Spurgeon, Carbine Tableland	Gary Sexton	Untrained	1980's		
113	-16.5337837	145.2871425	6000	Mt Lewis Rd	Chris Clague	Biologist	1994	10	10
114	-16.5337837	145.2871425	6000	Mt Lewis Rd	Mike Trenerry	Biologist	1994	1	
115	-16.5337837	145.2871425	6000	Mt Lewis Rd	Mike Trenerry	Biologist	1994	6	
116	-16.5337837	145.2871425	6000	Mt Lewis Rd	Mike Trenerry	Biologist	1994	10	
117	-18.2666	146.0166	25000	near Cardwell	C6142	Museum	1920	9	10
118	-17.1081081	145.595238.	3000	Mt Haig Rd, Lamb Range	Mike Trenerry	Biologist	1991		
119	-16.7279278	145.6104761	3000	Lake Morris Road, Lamb Range	Mike Trenerry	Biologist	1993		
120	-17.5909909	145.7180951	3000	Palmerston Highway	Reg Lockyer	Untrained	1980		
121	-17.7599099	145.6423809	3000	Cochable Creek Road	Alf Morris	Untrained	1990		
122	-17.6738738	145.650476	5000	Sutties Gap Road, Atherton Tableland	Matt Newport	Untrained	1983		
123	-16.031081	145.3719046	3000	Thornton's Peak	Rupert Russell	Biologist	1991	6	
124	-16.2531531	145.0380952	6000	Windsor Tableland	Chris Clague	Biologist	1994	10	9
125	-16.2531531	145.0380952	6000	Windsor Tableland	Chris Clague	Biologist	1994	10	10
126	-16.2531531	145.0380952	6000	Windsor Tableland	Chris Clague	Biologist	1994	10	10
127	-16.2531531	145.0380952	6000	Windsor Tableland	Mike Trenerry	Biologist	1992		
128	-17.2648648	145.8523809	300	Mt. Bellenden Ker repeater station	Scott Burnett	Biologist	1996	10	
129	-17.4031531	145.7061904	300	Topaz, Selection 300, Atherton Tableland	F. P. Logan	Untrained	1920-30's		
130	-17.499099	145.4895237	1000	Evelyn Central, Evelyn Tableland	Ted Keid	Untrained	1920-30's		
131	-17.4319819	145.4833333	500	Mt Hypipamee, Atherton Tablelands	Ted Keid	Untrained	WWII		
132	-17.4319819	145.4833333	500	Mt Hypipamee, Atherton Tablelands	Ted Keid	Untrained	WWII		
133	-17.5693693	145.6990079	500	Palmerston Highway, Beatrice River	Mr. V. Page	Untrained	1989		
134	-17.5806299	145.7075793	500	Palmerston Highway, Beatrice R. area	Mr. V. Page	Untrained	1990		
135	-17.5909909	145.7180951	3000	Palmerston H'way, btw. Beatrice R and Henrietta Ck	Bob Barkworth	Untrained	1998		
136	-17.1247747	145.6295237	1000	bottom of A-road, Danbullla	Rigel Jensen	Biologist	1994		
137	-16.5295237	145.2774774		Mt Lewis Rd, swamp	Rigel Jensen	Biologist	1996		
138	-17.609009	145.7757076	1000	Palmerston H'way, K-Tree turn-off	Bill Buckley	Untrained	1991		

139	-17.1315314	145.595238	500	Danbulla, Kauri Ck walking track	Graeme Falkner	Untrained	1989		
140	-17.4	145.7219046	1000	Topaz, old Boonjie Rd, Atherton Tablelands	Shirley Marr	Untrained	1989		
141	-17.4072072	145.7023809	500	Topaz, between Dump and Westcott Rd	Kath and Jack Proudfoot	Untrained	1997		
142	-18.9833333	146.166666	5000	Paluma Dam Road	Alan Gillanders	Untrained	1971		
143	-16.516666	145.2690475	300	Mt Lewis Rd, top hut	Alan Gillanders	Untrained	19		
144	-16.516666	145.2690475	300	Mt Lewis Rd, top hut	Alan Gillanders	Untrained			
145	-17.2648648	145.8523809	300	Mt. Bellenden Ker repeater station	Mike McGuire	Untrained	1971-81		
146	-19.0299244	146.136666	300	Black Friars, Paluma area	Tom Conner	Untrained	1939		
147	-18.9680179	146.16	500	Paluma Dam Road	Tom Conner	Untrained	1950		
148	-17.5342342	145.6071428	500	cnr Kjellberg Rd and Old Palmerston Highway	Henry Tranter	Untrained	1920's		
149	-17.6108108	145.5580952	500	Old Palmerston h'way, Massey Creek	Henry and Elaine Tranter	Untrained	1975		
150	-17.6	145.7585714	3000	Palmerston Highway, Henrietta Ck area	Yvonne Wozniak	Untrained	1990		
151	-17.0279278	145.6247618	500	Lamb Range	Andrew Dennis	Biologist	1999	4	10
152	-19.8416666666667	145.858333333333	900	Gainsford GHFL680:Cad8058;Vicinity U shaped wth, 3km NNE Lochwall Hs., NE	Dalrymple Fauna Survey (QNPWS Unpubl. data)	Biologist	1984	5	1

1. Blank spaces indicate that no information is available.
2. Abbreviations in Source column are those of Museums and other collections as follows; AM, Australian Museum; AMNH, American Museum of Natural History; NMNH, National Museum of Natural History; MCZ, Museum of Comparative Zoology; MV, Museum of Victtoria; QFS, Queensland Forest Service; CSIRO, Commonwealth Scientific and Industrial Research Organisation; QM, Queensland Museum.
3. Numbers in the Source column refer to museum specimen numbers the prefixes of which are M, Australian Museum, JM, Queensland Museum, C, Museum of Victoria.

Appendix 8.3. Spot-tailed quoll sighting and scat density from each bioregion from which D. maculatus has been recorded.

Bioregion	Time[1]	Sightings since 1975	D[2] (sightings/km)	N[3] (scats/year)		D (scats/km)[4]		Detectibilty[5]
				1993	1994	1993	1994	
Finnegan Uplands	1970	0	0	NS	NS	NS	NS	3
Thornton Uplands	1989	1	0.06	NS	NS	NS	NS	4
Thornton Lowlands	1992	7	0.46	NS	NS	NS	NS	1
Windsor Uplands	1977-1994	17	1.13	310	262	20.6	17.5	3
Carbine Uplands								
Mt Lewis section	1960's-1994	12	0.8	34	160	2.3	10.7	2
Mt Spurgeon section		1937-1980's	6	0.33	NS	0	NS	0
Lamb Uplands	1988-1993	7	0.46	NS	55	NS	3.7	2
Atherton Uplands	1915-1994	16	0.46	NS	0	NS	0	1
Bartle Frere Uplands	1965-1992	3	0.2	NS	NS	NS	NS	4
South Johnstone Uplands	1962-1994	15	0.86	8	17	0.6	1.1	2
Koombooloomba Uplands	1959-1970's	4	0.06	0	2	0	0.14	2
Bellenden Ker Uplands	1971-1992	5	0.33	NS	NS	NS	NS	3
Kirrama Uplands	1888-1920	1	0	0	0	0	0	3
Spec Uplands	1920-1940	4	0	0	0	0	0	2
Townsville Lowlands	pre-1950-1995	2	0.06?	NS	NS	NS	NS	1

Note

1. Time span covered by records of *D. maculatus* for each bioregion.
2. Sighting density is calculated as the total number of sightings of *D. maculatus* per kilometre of trafficable road in each bioregion.
3. N scats is the total number of scats recorded in each bioregion during each year of scat survey.
4. Scat density is the number of scats found per km of road during scat transects conducted in 1993 and 1994.
5. Detectability codes: 1, much human activity including closer settlement and road networks; 2, moderate human activity including regular tour operators, limited road network; 3, very little human activity, no public access by road but visited regularly by land managers; 4, no human activity, no road or other access other than by foot.

Appendix 9.1. Population attributes1 and sources used for VORTEX modelling the persistence of closed populations of Cats, Dingoes, Foxes and Spot-tailed Quolls under a 10 and 20 year cycle of zero recruitment but without a change to adult survival.

Attribute	Spot-tailed Quoll[2]	Dingo[3]	Fox[4]	Cat[5]
Simulation repeated	100	100	100	100
Simulation run	100 years	100 years	100 years	100 years
Migration?	0	0	0	0
Incorporate inbreeding depression?	N	N	N	N
EV (rep'n) correlated with EV(survival)?	N	N	N	N
How many catastrophes?	1	1	1	1
Monogamous or polygynous breeding?	P	P	P	P
At what age females begin breeding?	1 year	1 year	1 year	1 year
At what age males begin breeding?	1 year	1 year	1 year	1 year
What is the maximum age beyond which all animals die?	3 years	12 years	12 years	10 years
Sex ratio at birth?	1:1	1:1	1:1	1:1
Maximum number of young per year per female	6	9	10	14
Is reproduction density dependent?	N	N	N	N
Are good years for reproduction good years for survival?	N	N	N	N
% females breeding?	88	93	85.5	90

Exponential steepness, B?	2 (default)	2 (default)	2 (default)	2 (default)
Allee parameter, A?	1 (default)	1 (default)	1 (default)	1 (default)
Of females which breed, what % produce,				
litter size				
1?	0	0.01	2	0.13
2?	4	0.07	5	0.47
3?	0	0.62	15.5	0.9
4?	20	12	19	1
5?	24	33.81	29.5	6
6?	59	33.81	6.5	6
7?	N/A	12	4	11
8?	N/A	0.6	2	23
9?	N/A	0.08	0	26
10?	N/A	N/A	2	11.5
11?	N/A	N/A	N/A	8.5
12?	N/A	N/A	N/A	4
13?	N/A	N/A	N/A	0.8
14?	N/A	N/A	N/A	0.7
What is SD in % producing litters?	13.4	12.25*	12.25*	12.25*
Mortality of females;				
age 0 to 1	60%	21.5%	70%	60%
SD in above	default	default	default	default
annual adult mortality	34%	5%	34%	34%
SD in above	default	default	default	default
Mortality of males				

age 0 to 1	60%	21.5%	60%	60%
SD in above	default	default	default	default
annual adult mortality	59%	5%	59%	59%
SD in above	default	default	default	default
Probability (as a %) of catastrophe	5%	5%	5%	5%
Severity of catastrophe as a multiplicative factor				
Reproduction	0.0	0.0	0.0	0.0
Adult survival	1	1	1	1
All adult males in breeding pool?	Y	Y	Y	Y
Start at stable age distribution?	Y	Y	Y	Y
Carrying capacity?	as per population size	as per population size	as per population size	as per population size
Trend in k predicted?	N	N	N	N
Harvest?	N	N	N	N
Supplement?	N	N	N	N

Note.

1. No published information on mortality schedules or numerical distribution of litters of different sizes is available for the Eutherian carnivores. Numerical values for Quoll populations have been used for the Eutherians in PVA modelling.

Sources: 2, (Spot-tailed Quoll) this study; 3, (Dingo) Jones and Stevens 1988, Corbett 1995; 4, (Red Fox) Sheldon 1992, Lloyd 1980; 5, (Feral Cat) Jones and Coman 1982.

Appendix 9.2. Population attributes1 and sources used for VORTEX modelling the persistence of closed populations of Cats, Dingoes, Foxes and Spot-tailed Quolls under conditions of increased annual adult mortality: (10, 30, 50 and 70% increases).

Attribute	Spot-tailed Quoll[2]	Dingo[3]	Fox[4]	Cat[5]
Simulation repeated	100	100	100	100
Simulation run	100 years	100 years	100 years	100 years
Migration?	0	0	0	0
Incorporate inbreeding depression?	N	N	N	N
EV (rep'n) correlated with EV(survival)?	N	N	N	N
How many catastrophes?	0	0	0	0
Monogamous or polygynous breeding?	P	P	P	P
At what age females begin breeding?	1 year	1 year	1 year	1 year
At what age males begin breeding?	1 year	1 year	1 year	1 year
What is the maximum age beyond which all animals die?	3 years	12 years	12 years	10 years
Sex ratio at birth?	1:1	1:1	1:1	1:1
Maximum number of young per year per female	6	9	10	14
Is reproduction density dependent?	N	N	N	N
Are good years for reproduction good years for survival?	N	N	N	N
% females breeding?	88	93	85.5	90

Exponential steepness, B?	2 (default)	2 (default)	2 (default)	2 (default)
Allee parameter, A?	1 (default)	1 (default)	1 (default)	1 (default)
Of females which breed, what % produce,				
litter size				
1?	0	0.01	2	0.13
2?	4	0.07	5	0.47
3?	0	0.62	15.5	0.9
4?	20	12	19	1
5?	24	33.81	29.5	6
6?	59	33.81	6.5	6
7?	N/A	12	4	11
8?	N/A	0.6	2	23
9?	N/A	0.08	0	26
10?	N/A	N/A	2	11.5
11?	N/A	N/A	N/A	8.5
12?	N/A	N/A	N/A	4
13?	N/A	N/A	N/A	0.8
14?	N/A	N/A	N/A	0.7
What is SD in % producing litters?	13.4	12.25*	12.25*	12.25*
Mortality of females;				
age 0 to 1	60%	21.5%	60%	60%
SD in above	default	default	Default	default
annual adult mortality	34%	5%	34%	34%
SD in above	default	default	Default	default
Mortality of males				

age 0 to 1	60%	21.5%	60%	60%
SD in above	default	default	Default	default
annual adult mortality	59%	5%	59%	59%
SD in above	default	default	Default	default
All adult males in breeding pool?	Y	Y	Y	Y
Start at stable age distribution?	Y	Y	Y	Y
Carrying capacity?	1000	1000	1000	1000
Trend in k predicted?	N	N	N	N
Harvest?	10, 30, 50 & 70%	10, 30, 50 & 70%	10, 30, 50 & 70%	10, 30, 50 & 70%
Supplement?	N	N	N	N

Note.

1. No published information on mortality schedules or numerical distribution of litters of different sizes is available for the Eutherian carnivores. Numerical values for Quoll populations have been used for the Eutherians in PVA modelling.

Sources: 2, (Spot-tailed Quoll) this study; 3, (Dingo) Jones and Stevens 1988, Corbett 1995; 4, (Red Fox) Sheldon 1992, Lloyd 1980; 5, (Feral Cat) Jones and Coman 1982.

Appendix. 9.3. Sightings and associated information of Dingoes and Wild Dogs, Canis familiaris, in north Queensland.

Sighting No.	Date	Bioregion[1]	Lat (d.dec)	Long (d.dec)	Location	Record type	Nature of record	Observer	Occupation of observer	Habitat[1]
1	1994	CU	-16.4549	145.0974	Mt Spurgeon	sighting	Sightings over the years	Steve ?	Cattle Grazier there	Of,Vf
2	1990	Outside of WTWHA	-19.34	146.0822	Star Out Station, Dotswood	sighting	Sightings over the years		Cattle station manager	Of
3	1995	LU	-16.8666	145.6167	Track from Copperlode Dam to Mareeba Road	scat	5 scats on track	S. Burnett, A. Kutt	Zoologists	Of, Vf
4	1999	Outside of WTWHA	-19.3468	146.7559	Mt Stuart, track network on plateau	scat	40 scats on track network	S. Burnett, A. Kutt	Zoologist	Of
5	1993	CCL	-18.4666	146.015	Bruce Highway, 2km N. Cardwell Range	sighting	roadkill	S. Williams	Zoologist	Of
6	1992	CCL	-18.2333	146.0167	Coastal plain, Edmund Kennedy N. P	sighting	pack of two gold and one black and tan dog	S. Burnett, S. Van Dyck, S. Townley	Zoologist	Of
7	1986-2000	Outside of WTWHA	-19.33	146.75	James Cook University Grounds	sighting	several individuals in a sighted	S. Burnett	Zoologist	Of
8	12/99	Outside of WTWHA	-17.3266	145.3028	Powerline Easement, Walsh River	sighting	alive on track	S. Burnett	Zoologist	Of
10	11/99	Outside of WTWHA	-17.1981	145.0129	Eureka Creek, Muldiva Crossing	scat	40 scats collected	S. Burnett, P. Bousi	Zoologists	Of
11	8/98	Outside of WTWHA	-19.4234	146.588	Pinnacles, Townsville	scat	15 scats collected	S. Burnett, D. James	Zoologists	Of
13	12/99	Outside of WTWHA	-16.6283	145.3181	Mt Molloy, Blue Lagoon Reserve	scat	28 scats collected	S. Burnett	Zoologist	Of,A
15	1998	Outside of WTWHA	-18.7583	145.85	Mt Fox, road to Pineapple Creek swimming Hole	scat	8 scats	S. Burnett	Zoologist	Of
16	1995	Outside of WTWHA	-19.0282	146.2911	Hencamp Creek	sighting	live animal	Jim Tait	Ecologist	Of
17	3/2000	TL	-19.1014	146.3462	Bruce Highway, Clemant S. F.	sighting	alive on Highway	S. Burnett	Zoologist	Of
18	1989	SU	-19.0113	146.2	Paluma Dump	sighting	alive on dump	S. Burnett	Zoologist	Vf
19	1989	SU	-19.0113	146.0822	Paluma, my honours	sighting	daytime sighting in rai	S. Burnett	Zoologist	Vf

					trapping grid					
20	10/98	SJU	-17.6833	145.6667	Maalan Rd	sighting	daytime sighting on road	S. Burnett	Zoologist	Vf
21	1993	SJU	-17.6388	145.6667	Powerline access track, Charappa	sighting	daytime sighting on easement	Jeff Middleton	Zoologist	Vf
22	1994	CU	-16.5306	145.2866	Mt Lewis Road	sighting	Daytime sighting on road	S. Burnett	Zoologist	Vf
23	1993	AU	-17.75	145.5417	Tully Falls Road	sighting	Daytime sighting on road	S. Burnett	Zoologist	Vf
24	10/1997	BF	-17.3861	145.8083	Mt Bartle Frere summit area	scat	scats collected from survey transect	S. Burnett	Zoologist	Vf
25	1993 & 199	WU	-16.25	145.05	Windsor Tableland	scat	scats collected from survey transect	S. Burnett	Zoologist	Vf, Of
26	1993 & 199	CU	-16.4549	145.0974	Mt Spurgeon	scat	scats collected from survey transect	S. Burnett	Zoologist	Vf, Of
27	1993 & 199	CU	-16.5306	145.2866	Mt Lewis Rd	scat	scats collected from survey transect	S. Burnett	Zoologist	Vf
28	1993 & 199	BMC	-16.6667	145.5	Black Mountain Road	scat	scats collected from survey transect	S. Burnett	Zoologist	Vf,A
29	1993 & 199	LU	-17.1	145.6166	Mt Haig Rd, Lamb Range	scat	scats collected from survey transect	S. Burnett	Zoologist	Vf
30	1993 & 199	LU	-17.1	145.5833	Mt Edith Rd, Lamb Range	scat	scats collected from survey transect	S. Burnett	Zoologist	Vf
31	1993 & 199	SJU	-17.6833	145.6583	South Johnstone SF	scat	scats collected from survey transect	S. Burnett	Zoologist	Vf
32	1993 & 199	AU	-17.7666	145.5417	Tully Falls Road	scat	scats collected from survey transect	S. Burnett	Zoologist	Vf
33	1993 & 199	KOU	-17.8778	145.6167	Koombooloomba	scat	scats collected from survey transect	S. Burnett	Zoologist	Vf
34	1993 & 199	KU	-18.2162	145.7833	Kirrama	scat	scats collected from survey transect	S. Burnett	Zoologist	Vf,Of
35	1993 & 199	LU	-18.6306	145.85	Wallaman Falls	scat	scats collected from survey transect	S. Burnett	Zoologist	Vf, Of
36	1993 & 199	SU	-18.85	146.15	Mt Spec	scat	scats collected from survey transect	S. Burnett	Zoologist	Vf
37	1993 & 199	HU	-19.2333	146.4025	Mt Halifax	scat	scats collected from survey transect	S. Burnett	Zoologist	Vf
38	1990	HU	-19.15	146.335	Mt Halifax	scat	Scat collected from	S. Burnett	Zoologist	Vf

							summit			
40	1994	Outside of WTWHA	-19.9504	145.5469	Great Basalt Wall	scat	Scats collected	S. Burnett	Zoologist	Of, Vf
41	10/1998	Outside of WTWHA	-19.3558	146.8345	Mt Muntalungra, Townsville	scat	Scats collected	S. Burnett	Zoologist	Of
42	1998	Outside of WTWHA	-19.4	147.1	Clevedon	sighting	Live	Geoff Newby	Untrained landowner	Of

Note

1. Bioregional codes: AU, Atherton Uplands; BF, Bertle Frere uplands; BK, Bellenden Ker Uplands; CU, Carbine Uplands; HU, Halifax Uplands; KoU, Koombooloomba Uplands; LU, Lamb Uplands; SJU, South Johnstone Uplands; WU, Windsor Uplands.
2. Habitat codes: A, agricultural landscape; H, heathland; Vf, vine forest; Of, open forest; G, natural grassland; present fragmented forest habitats within dry open forest or agricultural landscape matrix, respectively.

Appendix 9.4. Records of Dingo/Dogs from scat transects throughout the upland bioregions of the Wet Tropics Area.

BIOREGIONS[3]	1993		1994	
	Scats/km	Other signs[1]	Scats/km	Other signs[1]
Finnegan Uplands	NS	NS	NS	NS
Thornton Uplands	NS	NS	NS	NS
Windsor Uplands	1.5	+	0.2	Yes
Carbine Uplands				
Lewis	1	+	0.3	Yes
Spurgeon	NS	NS	1.7	Yes
Black Mountain Corridor	1	+	0.7	No
Lamb Uplands				
Mt Haig	NS	NS	0.4	Yes
Mt Edith	NS	NS	0.3	Yes
Copperlode	NS	NS	0	Yes
Bellenden Ker[2]	0	-	0	No
Atherton Uplands	1.3	-	1	Yes
Bartle Frere[2]	0	-	0.43	No
South Johnstone Uplands	0.2	+	0.3	Yes
Koombooloomba Uplands	0.5	+	1.2	Yes
Kirrama Uplands	0.5	+	0.3	Yes
Mt. Lee Uplands	0	+	0.1	Yes
Mt. Spec Uplands	0.2	+	0	Yes
Mt. Halifax Uplands	0.3	+	0.5	Yes

1. Other signs of dingoes include; tracks and sightings made by the author during this study or at other times since 1986.
2. Bartle Frere and Bellenden Ker data collected in 1996 and 1997.
3. Areas not surveyed are signified by NS.

Appendix. 9.5 . Sightings and associated information of Red Foxes, Vulpes vulpes in north Queensland.

Sighting No.	Date	Bioregion	Alt	Lat (d. dec)[1]	Long. (d.dec)	Locality	Record type	Nature of record	Observer	Occupation of observer	Habitat[2]
1	1994	AU	740	-17.3386	145.6214	On Malanda-Yungaburra Rd, Platypus Park"	Nightime sighting	Alive on road	Jacqueline Nolen	Zoologist	A
2	1983	LU	440	-16.8242	145.6242	Kuranda-Mareeba Rd	Nightime sighting	Alive on road	Jacqueline Nolen	Zoologist	Vf,A
3	6/4/93	AU		-17.4833	145.6	Millaa-Millaa			Darren Storch, QDEH Cairns	Zoologist	A
4	22/6/93	not WTW HA		-17.1333	145.4166	Walkamin			Darren Storch, QDEH Cairns	Zoologist	Of,A
5	1/9/93	AU		-17.2666	145.6	Lake Eacham			Darren Storch, QDEH Cairns	Zoologist	Vf,A
6	6/4/93	CL		-15.4666	145.25	Cooktown			Darren Storch, QDEH Cairns	Zoologist	Of
7	1994	LU		-16.9797	145.5305	Davies Ck Toff, Mareeba-Kuranda Rd	sighting	dead on road	S. Comport	Zoologist	Of,A
8	1993	LU		-16.9797	145.5305	Davies Ck Toff, Mareeba-Kuranda Rd	sighting	dead on road	Werren 1993	Ecologist	Of,A
9	1993	LU		-16.9797	145.5305	Davies Ck Toff, Mareeba-Kuranda Rd	sighting	dead on road	Werren 1993	Ecologist	Of,A
10	pre 1993	BMC		-16.7833	145.6131	McKenzies pocket	sighting		Werren 1993	Ecologist	Of,A
11	pre 1993	not WTW HA		-16.6308	145.1308	Mt Carbine	sighting	alive	Werren 1993	Ecologist	Of
12	1980's	WU				Mt Windsor Tableland	sighting	alive	via J. Winter	Timber worker	Vf/Of
13	1980's	WU				Mt Windsor Tableland	sighting	alive	via J. Winter	Timber worker	Vf/Of
14	1994	not WTW HA		-17.5	145.2333	north of Mt Garnett	nightime sighting	alive on road	Mason 1996	Zoologist	Of
15	8/94	not		-17.1333	145.1333	Mutchilba	shot by DPI	shot	Mason 1996	Zoologist	Of

		WTW HA					Officer				
16	6/95	not WTW HA		-17.1333	145.1833	Mutchilba	sighting	seen by landowner	Mason 1996	Zoologist	Of
17	1/95	AU		-17.4666	145.4666	nr Millaa Millaa	roadkill		Mason 1996	Zoologist	A
18	3/95	not WTW HA		-17.7	145.2	nr. Innot Hot Springs	nightime sighting	sighted at chook pen	Mason 1996	Zoologist	A
19	3/95	AU		-17.5	145.5666	nr Millaa Millaa	nightime sighting	alive on road	Mason 1996	Zoologist	A
20	7/95	AU		-17.5333	145.5166	nr Millaa Millaa	morning sighting		Mason 1996	Zoologist	A
21	5/95	not WTW HA		-16.8	145.3333	Kennedy Highway	north of Mareeba	roadkill	Mason 1996	Zoologist	Of,A
22	6/95	AU		-17.5666	145.4	Kennedy Highway, Herberton - Ravenshoe	nightime sighting	alive on road	Mason 1996	Zoologist	Of,A
23	?	not WTW HA		-15.9166	144.8333	nr Lakeland Downs		shot female	Mason 1996	Zoologist	Of,A
24	2/96	AU		-17.4166	145.4	nr Herberton	nightime sighting	alive on road	Mason 1996	Zoologist	Of,A
25	2/96	AU		-17.4166	145.4166	nr Herberton	nightime sighting	alive on road	Mason 1996	Zoologist	Of,A
26	2/96	AU		-17.5	145.35	nr Ravenshoe	nightime sighting	alive on road	Mason 1996	Zoologist	Of,A
27	3/96	AU		-17.2	145.5	4km w. Kairi			Mason 1996	Zoologist	A
28	1997	Not WTW HA		-16.9189	145.3356	Biboora	Sighting	roadkill	Jeff Middleton	Zoologist	Of,A
29	1999	Not WTW HA		-19.3648	146.791	Flinders Highway, Roseneath, Townsville	sighting	roadkill	David James	Zoologist	Of
30	1995	Not WTW HA		-19.3626	146.818	Rocky Springs, s Townsville	Sighting	Dead animal in bush	Greg Calvert, S. Burnett	Biologists	Of

Notes

1. d.m.s., degrees minutes seconds; d.dec, degrees decimals.
2. Habitat codes: a, agricultural landscape, vf, vine forest, of, dry open forest, vf/dof & vf/a represent fragmented forest habitats within dry open forest or agricultural landscape matrix, respectively.

Appendix. 9.6. Sightings and associated information of Feral Domestic Cats, Felis catus in north Queensland.

Sighting No.	Date	Bioregion[1]	Alt	Lat (d.m.s)	Long. (d.m.s.)	Location	Record type	Nature of record	Observer	Occupation	Habitat[1]
1	30/10/39	CU	1060	-16.31.50	145.17.12	Mt Lewis Rd	Specimen	Skull on roadside	Scott Burnett	Zoologist	Vf
2	30/10/39	CU	980	-16.31.37	145.16.57	Mt Lewis Rd	Daytime sighting	Adult and kittens alive on road	Rupert Russell	Natural Resource Manager (QPWS)	Vf
3	1977	CU	960	-16.35.40	145.16.30	Mt Lewis Rd	Daytime sighting	Alive on road	George Hiensohn	Zoologist	Vf/A
4	8/10/93	SJ	700	-17.40.13	145.38.45	Sutties Gap Rd	Print	Print in road surface	Scott Burnett	Zoologist	Vf
5	23/6/91	SJ	620	-17.35.28	145.43.03	Palmerston Highway, near Beatrice R Bridge	Sighting	Alive on road at night	Scott Burnett	Zoologist	Vf
6	12/12/91	SJ	680	-17.34.32	145.41.32	Palmerston Highway, near Beatrice R Bridge	Sighting	Alive on road at night	Scott Burnett	Zoologist	Vf
7	18/3/92	SJ	500	-17.34	145.40	Palmerston Highway, near Beatrice R Bridge	Roadkill	Roadkill	Scott Burnett	Zoologist	Vf
8	15/5/92	SJ	580	-17.34.15	145.41.18	Palmerston Highway, 1km down from Beatrice R Bridge	Sighting	Roadkill	Scott Burnett	Zoologist	Vf
9	18/11/94	SJ	680	-17.41.08	145.39.35	Sutties Gap Rd	Nightime sighting	Alive on road	Scott Burnett & J. Golberg	Zoologists	Vf
10	22/11/94	SJ	640	-17.41.47	145.39.44	Sutties Gap Rd	Nightime sighting	Alive on road	Scott Burnett & J. Golberg	Zoologists	Vf
11	1990's	KoU	760	-17.50.19	145.35.48	Koombooloomba Dam	Daytime sighting	Alive on Dam edge	Alf Morris, QFS	Forest Ranger	Vf
12	1990's	LU	540	-16.59.00	145.40.33	Copperlode Dam	Daytime sighting	Alive on Dam edge	Dietmar Rieman	Water Resources Ranger	Vf
13	1991	AU	1020	-17.28.00	145.28.30	Longlands Gap	Scat	Scat on track	Karl Vernes & Barbara Triggs	Zoologists	Vf
14	17/6/91	AU	1020	-17.26.16	145.30.20	Seamark Rd	Roadkill sighting	Dead on road	Scott Burnett	Zoologist	Vf
15	8/7/91	AU	1020	-17.31.16	145.34.00	East Evelyn Rd	Roadkill sighting	Dead on road	Scott Burnett	Zoologist	P

16	1990's	WU	>1000	-16.13.36	144.58.42	Windsor Tableland	Sighting	Alive on road; adult and kittens	Bruce Botha	Grazier	Of
17	1994	BF	700	-17.22.55	145.45.57	2km along west Bartle Frere track	Daytime sighting	Alive on walking trail	Tim Perry	Botanist	Vf
18	1973	BK	1540	-17.15.53	145.51.10	Mt Bellenden Ker repeater station	Sighting	Pet taken and left there	John Winter	Zoologist	Vf/A
19	1994	AU	1020	-17.41.13	145.30.55	Tully Falls area	Nightime sighting	Alive on road	Steve Williams	Zoologist	Vf
20	1994	HU	600	-17.14.00	146.24.09	Bluewater S. F	Scat	Scat on road	Scott Burnett & B.arbara Triggs	Zoologists	Vf
21	1996	SJ	600	-17.42.50	145.35.23	South Johnstone area, H-Track	Print	Print in road surface	Scott Burnett	Zoologist	Vf
22	1996	SJ	700	-17.41.16	145.39.21	South Johnstone area, H-Track	Print	Print in road surface	Scott Burnett	Zoologist	Vf
23	1996	BK	1490	-17.15.57	145.51.27	Bellenden Ker, last Tower"	Scat	In clearing	Scott Burnett	Zoologist	Vf
24	1996	BF	1540	-17.22.00	145.46.00	Summit ridge of Bartle Frere	Scat	43 scats on foot trail	Scott Burnett	Zoologist	Vf
25	1997	BF	1540	-17.22.00	145.46.00	Summit ridge of Bartle Frere	Scat	86 scats on foot trail	Scott Burnett	Zoologist	Vf, H
26	1997	BF	1540	-17.22.00	145.46.00	Summit ridge of Bartle Frere	Print	In sandy substrate on foot trail	Scott Burnett	Zoologist	Vf
27	1994	outside of WTWHA				Mt Molloy, Brown property	Sighting	Live animal on creek bank	Scott Burnett	Zoologist	Of,A
28	1996	outside of WTWHA				Palmer River Crossing	Sighting	Alive at night	Scott Burnett	Zoologist	Of
29	1996	outside of WTWHA				On road c. 90km east of Chillago	Sighting	Roadkill	Scott Burnett	Zoologist	Of
30	5/99	outside of WTWHA				Kendall River	Scat	6 scats collected	Scott Burnett	Zoologist	Of
31	3/2000	outside of WTWHA				Walsh River	Sighting	Alive on road	Scott Burnett	Zoologist	Of
32	Dec. 1989	outside of WTWHA				Chillagoe	Sighting	Alive	David James	Zoologist	Of
33	5/2000	outside of WTWHA				Kennedy Highway, between Ravenshoe and Kaban	Sighting	Roadkill	David James	Zoologist	Of,A
34	5/2000	outside of WTWHA				North bank of Wild River, Silver Valley	Sighting	Alive at night	David James	Zoologist	Of

Note

1. Bioregional codes: AU, Atherton Uplands; BF, Bertle Frere uplands; BK, Bellenden Ker Uplands; CU, Carbine Uplands; HU, Halifax Uplands; KoU, Koombooloomba Uplands; LU, Lamb Uplands; SJU, South Johnstone Uplands; WU, Windsor Uplands.
2.Habitat codes: A, agricultural landscape; H, heathland; Vf, vine forest; Of, open forest; G, natural grassland; present fragmented forest habitats within dry open forest or agricultural landscape matrix, respectively.

Appendix 9.7. Results of Cat surveys throughout the upland bioregions of the Wet Tropics Area.

BIOREGION	1993		1994		All Years
	Scats/km	Other signs	Scats/km	Other signs	Cats from other sources
Finnegan Uplands	NS	NS	0	-	-
Thornton Uplands	NS	NS	NS	NS	-
Windsor Uplands	0	+	0	-	+
Carbine Uplands					
Lewis	0	+	0	-	+
Spurgeon	NS	NS	0	-	-
Black Mountain Corridor	0	-	0	-	-
Lamb Uplands					
Mt Haig	0	-	0	-	-
Mt Edith	0	-	0	-	-
Copperlode	0	-	0	-	+
Bellenden Ker[1]	1/3	-	0	-	+
Atherton Uplands					
Bartle Frere[1]	43/7	-	78	+	+
South Johnstone Uplands	0	+	0	+	-
Koombooloomba Uplands	0	-	0	-	-
Kirrama Uplands	0	-	0	-	-
Mt. Lee Uplands	0	-	0	-	-
Mt. Spec Uplands	0	-	0	-	-
Mt. Halifax Uplands	0	+	1/15	-	-
TOTAL					

1. Other signs of cats include; tracks, skeletal remains and sightings made by the author during this study or at other times since 1986.
2. Bartle Frere and Bellenden Ker data collected in 1996 and 1997.
3. Areas not surveyed are signified by NS.
4.. Cat records from other sources include published observations and sightings of cats made by others and by the author outside of the time span of this study.
5. All cat records are listed with details, in Appendix 9.6.

Appendix 9.8. The percentage of total mammalian prey items of different ecomorphic classes of mammalian prey in the diet of Dingoes, Cats and the Spot-tailed Quoll(S-t Quoll), in the Wet Tropics World Heritage Area and of the Red Fox in wet forested habitats in southern Australia.

See Table 9.1 for a list of sources used for Fox diet.

Small mammals, up to 450g, medium-sized mammals, 450-2000g, large mammals >2000g. Large arboreal mammals, (the Koala), are excluded as none has been reported from scat studies used here.

Note that most Cat scats were collected from a single locality, the summit area of Mt Bartle Frere.

	Wet Tropics (this study)			**Other wet forest areas in Australia**
Prey category	**Dingoes**	**Cats**	**S-t Quoll**	**Fox**
Number of scats:	282	120	1252	3438
Number of prey items	456	129	1560	
small terrestrial	3	33.3	13.2	10.4
small scansorial	4.3	38	23.1	6.1
small arboreal	0.2	0	1.1	0.5
Total small mammals	**8.3**	**70**	**37.6**	**17**
medium terrestrial	17.3	5.4	23.8	8.6
medium scansorial	1.5	6.2	3.7	0
medium arboreal	9.8	0.7	19.6	3.6
Total medium mammals	**28.7**	**12.4**	**47.7**	**12.2**
large terrestrial	42.5	4.7	4.1	8.6
large scansorial	6.1	0	0.5	2.3
Total large mammals	**38.8**	**4.7**	**4.7**	**10.9**
Other				
Aves	7	12.4	3.9	7.2
Reptiles	1.5	0	2.2	2.7
Invertebrates	3	0	4.2	16.1
Plant	12.5	0	0	34.4
Total other	**24**	**12.4**	**10.5**	**60.4**

Appendix 9.9. Frequency occurrence of prey species from 275 Dingo scats collected throughout the Wet Tropics Area during this study.

Insects, Reptiles and Birds identified to class level only.

Upland bioregion[3]	Windsor		Spu	Le	BMC	La	A	SJ	Ko	Ki	Lee	Spe	H	TOTAL	
PREY SPECIES	F[1]	P[2]	F	F	F	F	F	F	F	F	F	F	F	F	P
Small Terrestrial															
Rattus fuscipes	4	2.5	3	3	0	0	0	1	1	0	0	0	0	12	2.6
Rattus leucopus	1	0.6	2	1	0	0	0	0	0	1	0	0	0	5	1.1
Small scansorial															
M. cervinipes	3	1.9	4	2	0	0	2	2	3	3	1	0	0	20	4.3
Small arboreal															
P. breviceps	1	0.6	0	0	0	0	0	0	0	0	0	0	0	1	0.2
TOTAL SMALL MAMMAL	9	5.7	0	10	6	0	0	2	3	4	4	1	0	38	8.3
Medium Terrestrial															
Ornithorhynchus anatinus	15	9.5	1	0	0	0	0	0	0	0	0	0	0	16	3.5
Perameles nasuta	8	5.1	9	6	0	0	3	3	11	3	3	0	0	46	10.1
Hypsiprymnodon moschatus	2	1.3	0	4	0	0	2	1	1	3	0	0	0	13	2.8
Bandicoot sp.	2	1.3	0	0	0	0	0	0	0	0	0	2	0	4	0.9
Medium scansorial															
Dasyurus maculatus	1	1.3	0	0	0	0	0	0	1	0	0	0	0	2	0.4
Uromys caudimaculatus	1	1.3	0	0	1	0	2	0	1	0	0	0	0	5	1.1
Medium arboreal															
Pseudochirulus cinereus/herbertensis	3	1.9	10	4	0	3	6	2	5	0	0	0	0	33	7.2
Pseudochirops archeri	0	0	1	0	0	0	0	1	1	0	0	0	0	3	0.7
Hemibelideus lemuroides	0	0	3	0	0	0	0	0	0	0	0	0	0	3	0.7
Pseudocheirus **sp.**	1	0.6	1	2	1	0	0	0	1	0	0	0	0	6	1.3
TOTAL MEDIUM	33	21	25	18	3	3	13	7	22	7	3	2	0	131	28.7

MAMMAL															
Large terrestrial															
Isoodon macrourus	0	0	0	2	1	0	0	0	1	1	0	0	0	5	1.1
Tachyglossus aculeatus	5	3.2	1	3	0	0	1	0	0	0	0	0	0	10	2.2
Thylogale stigmatica	42	26.8	2	5	4	4	5	2	3	0	3	0	0	70	15.4
Wallabia bicolor	10	6.4	0	0	0	2	2	0	0	0	0	0	0	14	3.1
Canis familiaris	1	0.6	2	0	0	0	0	1	0	0	0	0	0	4	0.9
Sus scrofa	10	6.4	5	10	2	1	0	2	2	0	0	0	0	32	7
Bos taurus	5	3.2	0	0	0	1	0	5	3	0	0	0	0	14	3.1
Large scansorial															
Trichosurus vulpecula	0	0	1	0	0	0	0	3	0	0	0	0	0	4	0.9
***Dendrolagus* sp.**	8	5.1	1	2	1	3	0	2	3	3	0	1	0	24	5.3
TOTAL LARGE MAMMAL	81	51.6	12	20	7	11	8	15	11	3	3	1	0	177	38.8
Other															
Plant	23	14.7	11	1	3	4	4	5	1	1	2	2	0	57	12.5
Insecta	4	2.5	3	1	2	0	0	0	2	0	2	0	0	14	3.1
Reptile	2	1.3	0	1	2	0	0	0	1	1	0	0	0	7	1.5
Bird	5	3.2	3	2	1	4	4	5	2	2	2	2	0	32	7
TOTAL NON-MAMMALIAN	34	21.7	17	5	8	8	8	10	6	4	6	4	0	110	24.1
Number scats	104		26	38	9	14	20	21	34	10	8	4	0	281	
No. prey items	157		53	24	22	29	34	42	18	16	8	0	0	456	

1. F: frequency occurrence of each prey type in Dingo scats.
2. P: percent occurrence of each prey type in Dingo scats. Percent occurrence calculated for Windsor and Total values only, because of low sample numbers from other bioregions.
3. Wet Tropics Bioregional Codes: W, Mt Windsor Uplands, Spu, Mt Spurgeon (Carbine Uplands), Le, Lewis (Carbine Uplands), BMC, Black Mountain Corridor, La, Lamb Uplands, SJ, South Johnstone Uplands, Ko, Koombooloomba Uplands, Ki, Kirrama Uplands, Lee, Mt Lee Uplands, Spe, Mt Spec Uplands, and H, Mt Halifax Uplands (See Fig 1) for more precise locality details.

Appendix 9.10. Diet of Cats in the upland bioregions of the Wet Tropics Area from 123 scats collected from transects between 1993 and 1997.

Upland bioregion	BF[1]		BK[1]	SJ[1]	H[1]	TOTAL	
PREY SPECIES	F[2]	P[2]	*F*	F	F	F	P
Small Terrestrial							
Rattus fuscipes	40	31	1	0	0	41	31.8
Rattus leucopus	2	1.5	0	0	0	2	1.5
Small scansorial							
Antechinus godmani/stuartii	30	23.3	0	0	0	30	23.3
Cercartetus caudatus	2	1.5	0	0	0	2	1.5
Melomys cervinipes	11	8.5	0	1	1	13	10.1
Pogonomys mollipilosus	1	0.75	0	0	0	1	0.75
Uromys hadrourus	5	3.8	0	0	0	5	3.8
TOTAL SMALL MAMMAL	91	70.5	1	1	1	94	72.9
Medium Terrestrial							
Dasyurus hallucatus	1	0.75	0	0	0	1	0.75
Perameles nasuta	6	4.7	0	0	0	6	4.7
Medium scansorial							
Uromys caudimaculatus	8	6.2	0	0	0	8	6.2
Medium arboreal				0	0		
Pseudochirulus herbertensis	1	0.75	0	0	0	1	1
TOTAL MEDIUM MAMMAL	16	12.4	0	0	0	16	12.4
Large terrestrial							
Isoodon macrourus	6	4.7	0	0	0	6	4.7
TOTAL LARGE MAMMAL	6	4.7	0	0	0	6	4.7
Other							
Bird	16	12.4	0	0	0	16	12.4
TOTAL NON-MAMMALIAN	16	12.4	0	0	0	16	12.4
Number scats	120		1	1	1	123	
No. prey items	129		1	1	1	132	

Note.

1. BF: Bartle Frere; BK, Bellenden Ker; SJU, South Johnstone Uplands; 4, H, Halifax Uplands.
2. F: Frequency occurrence of prey species in scats; P, percentage of all prey items

Appendix 10.1. Brochure produced by the author as part of a Threatened Species Network funded project aimed at raising the awareness of landholders to the ecology and conservation of the Spot-tailed Quoll in north Queensland.

Appendix 10.2. A brochure produced by the author aiming to raise community awareness about the importance and achievability of preventing quolls from preying upon domestic poultry, thereby reducing conflict between landholders and quolls.

Threats To Quolls

Within the rainforest, Spot-tailed Quolls are safe from most threats which include deliberate killings at chook pens or houses, accidental poison baiting, dog kills, road kills and Cane Toad poisoning. When they leave the rainforest and forage in adjacent agricultural areas Spot-tailed Quolls become much more susceptible to all of these risks.

Quolls run a greater risk of being killed by people when trying to kill chooks or when scavenging around houses, and they run a greater risk of encountering poison baits laid for wild dog control. Without the cover provided by dense vegetation, Quolls are much easier prey to dogs, foxes and birds of prey. Cane Toads are much more abundant in agricultural landscapes and so the risk of poisoning is much higher. The threat from vehicles is also much higher in agricultural landscapes, because roads are more numerous and carry higher levels of traffic.

The last Quoll known from the Paluma district was killed at a chook pen in the 1940's. Any Quoll killed at your chook pen could be the last in your district.

Do You Want More Information?

Quoll problems and queries?

Scott Burnett

Tree Kangaroo & Mammal Group

C/O QPWS

81 Main St, Atherton (next to courthouse)

Tel: (07) 4091 4262

or

for any information or to become involved in Quoll conservation

Visit our Quoll website at:

www.infocus.to/quolls

Members of the community hold a wealth of knowledge which scientists never hear about. If you want to share your knowledge of quolls with us we would love to hear from you. Please contact Scott Burnett at the number listed above to share your information.

Published by the TKMG, March 2001

LIVING WITH

Photo: R. Jackson

QUOLLS

The Spot-tailed Quoll is Endangered. People on the land can help the survival of Quolls by following the suggestions in this brochure including:

- **Quoll-proofing your chook pen and showing tolerance for quolls,**
- **following the supplied guidelines for 1080 baiting and,**
- **keeping dogs restrained and driving carefully at night.**

For more information or assistance with Quolls, get in touch with us by any of the contacts listed on the back of this brochure.

WWF Natural Heritage Trust QUEENSLAND PARKS AND WILDLIFE SERVICE TSN

What Can You Do To Help?

Why Are Quolls Endangered?

Spot-tailed Quolls are endangered because they naturally occur in low numbers in localised areas, and because their behaviour brings them into contact and conflict with humans. The greatest threats to Quolls are killings at chook pens, and accidental deaths from 1080 baits.

1. Quoll Proofing Your Chook Pen

Chook pens can be Quoll-proofed easily. A Quoll-proof chook pen needs to be totally enclosed (bird mesh is suitable). Fences need to be buried 15cm into the ground. You'll also be protecting your chooks from other predators. Visit our website for more information

2. 1080 Baiting

Research is being done to find how best to protect Quolls from 1080 baits. In the meantime, covering baits with at least 15 cm of loose soil, and placing baits no closer than 300m from the forest edge are good guides to help protect Quolls.

3. Other Ways of Helping Quolls

You can also help Quolls by keeping your dogs restrained at night and by driving carefully on our roads. You will be protecting not only Quolls, but a host of other wildlife.

North Queensland's Quolls

Photo: S. Burnett

Fig. 1. Spot-tailed Quoll

Spot-tailed Quoll Vital Statistics.

Weight: 800 - 2540 g

Total length: 615 - 960 mm

Diet: mammals, birds, reptiles, insects.

Breeding: June - September

Photo:J. Coughlan

Fig. 2. Northern Quoll

Northern Quoll Vital Statistics

Weight: 300 - 900 g

Total length: 300 - 600mm

Diet: insects, fruit, reptiles, birds, mammals.

Breeding: June - August

What Is A Quoll?

Quolls are flesh eating marsupials which are found only in Australia and New Guinea. They are most closely related to the Tasmanian Devil. Quolls can be recognised from all other Australian mammals by the white or cream spots which adorn their bodies (Figs. 1 & 2).

We have two Quoll species in north Queensland, the Spot-tailed Quoll (also known as the Tiger Cat) and the Northern Quoll (Native Cat). The Spot-tailed Quoll (Fig. 1) is a possum-sized animal which frequents rainforests and their margins. It is unique amongst the Quolls in possessing spots on its tail as well as its body. The Northern Quoll (Fig. 2) is a smaller species which frequents drier forest types especially on granite and in rocky country. The Northern Quoll has spots on its body only.

The Spot-tailed Quoll is endangered. Although once considered common, the status of the Northern Quoll is being reviewed. It has disappeared from about 75% of its former range across northern Australia in the past 30 years.

Protecting Poultry and Quolls

Published March 2001

Quolls are carnivorous marsupials which, since the earliest days of European settlement, have raided poultry yards in search of easy prey. Being killed by people at poultry yards is one of the major threats to Quolls on the Atherton Tablelands.

You can help to protect our Endangered Quolls by Quoll-proofing your chook yard. The designs for building a quoll-proof chook yard are endless (see the back of this pamphlet for some ideas), however there are a couple of basic features which need to be included to make your chook pen quoll-proof.

Spot-tailed Quoll by Louis Genis

Features of a Quoll-Proof Chook Pen

Make sure that there are no gaps in the netting including the roof and the door (Quolls are very good climbers).

Bury the netting at least 15cm into the ground (Quolls aren't good diggers), or if building a moveable chook pen, incorporate an outwardly directed skirt or wire around the bottom of your pen.

Normal Chook wire should be small enough to keep most Spot-tailed Quolls out, but if you want to be absolutely sure, or live in areas inhabited by the smaller Northern Quoll, use a smaller meshed (eg 1cm) netting such as budgie or mouse wire.

Make sure your chook pen is secured at night.

Free Fencing for your Chook Yard

Free fencing materials* are available to landholders in the Ravenshoe to Millaa Millaa, and Millaa Millaa to Butchers Creek areas of the Atherton Tablelands, who want to Quoll-proof their chook yards. Just contact the Quoll Project c/o QPWS-Atherton 4091 4262, or visit our web site - www.infocus.to/quolls

*Conditions apply

This quoll-proof chook pen was made by first building the walls, then sewing the roof on, and finally tensioning the roof with uprights. The walls are buried 10cm in the ground. These people get visited by Quolls most nights but have never lost a chook.

In this chook pen, the pen itself is not quoll-proof, but the chooks' night-time roost is. This roost is made out of half of an old rainwater tank and is sealed in with budgie wire on a wooden frame.

This quoll-proof chook pen is made from PVC pipe and is enclosed by budgie wire. Because it is designed to be moved around, the walls aren't buried into the ground but are flared outwards, creating a flap around the base which is effective against predators trying to get in. The door is made by sewing on a funnel of shadecloth which is kept tied shut. Shelter is provided by a tarp slung over the top of the enclosure. Full details of the construction of this style of chook pen are available in: Woodrow, L. 1996, The permaculture Home Garden. Viking Press.

By Quoll-proofing your chook pen you'll also be keeping other unwanted visitors, like Goannas and Hawks at bay.

Quolls need our tolerance, not our hostility, so please ensure that your chook pen is quoll safe.

Call: The Tree Kangaroo and Mammal Group,
c/o QPWS Atherton ph:4091 4262
or visit our web site at
www.infocus.to/quolls
if you have any questions.

Check out our Quoll web site
www.infocus.to/quolls

TREE - KANGAROO & MAMMAL GROUP

WWF

Natural Heritage Trust

QUEENSLAND PARKS AND WILDLIFE SERVICE

TSN

Appendix 10.3. Other materials produced during the course of this project.

Spotted-tailed Quoll, Species Management Profile, Department of Natural Resources, Queensland.

Dasyurus maculatus gracilis spotted-tailed quoll (nth. sub-sp.)

QUEENSLAND CONSERVATION STATUS: Endangered[1]

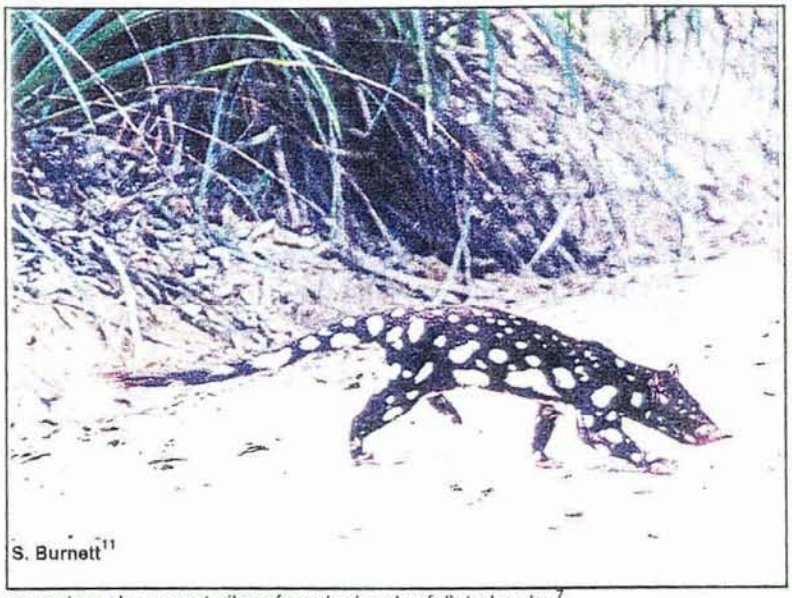
SPECIES TYPE: Carnivorous Marsupial **FAMILY:** Dasyuridae

- **Restricted distribution from Mt. Finnegan, near Cooktown to the southern Atherton Tablelands.**
- **Recorded from twelve State forests and timber reserves.**
- **Most often recorded from rainforest above 900 m altitude, but found routinely down to 400 m altitude at one locality.**
- **Threatening processes are: destruction and fragmentation of habitat by clearing; habitat modification; deliberate killing; and road kills. Possible threatening processes are: feeding on cane toads; disease transmitted by feral animals.**
- **Important protective measures for operations conducted under the *Forestry Act 1959* are: restriction of clearing and road construction from habitat; cooperation in community reafforestation and quoll protection projects; minimising road kills; and control of feral animals.**

SPECIES PROFILE G = See glossary

DESCRIPTION

Dasyurus maculatus gracilis is the northern sub-species of the Spotted-tailed quoll. It is a carnivorous marsupial that weighs up to 2.5 kg[2] and is the largest marsupial carnivore in north Queensland. Spotted-tailed quolls can be distinguished from other quoll species by the presence of spots on the tail.[3]



S. Burnett[11]

BIOLOGY & ECOLOGY

D. m. gracilis occurs at low densities and has a naturally high death rate.[2] It is strictly carnivorous, consuming anything of animal origin, alive or dead. Small to medium terrestrial and arboreal mammals constitute the bulk of its diet, but insects, reptiles, birds and probably frogs are also taken.[5] Breeding occurs each winter, with up to six young in a litter.[2] Females commence breeding at about one year of age, but rarely if ever breed when four years or older.[2] Females occupy slightly overlapping home ranges of up to 200 ha.[7] Males occupy much larger, though unquantified home ranges.[7] Den sites include boulder piles, epiphytes, tree hollows and cavities in strangler figs.[7] Breeding females prefer ground level dens in hollow buttress roots and amongst piles of cracked and exfoliated rocks.[7]

HABITAT[8]

Core populations occur in upland rainforest above 900 m altitude, although it is found down to 400 m at one locality. The presence of the quoll in upland rainforest appears to be related to higher prey abundances there.[8] *D. m. gracilis* is very mobile and specimens are occasionally recorded in wet sclerophyll and pasture adjacent to rainforest.[8]

QUEENSLAND DISTRIBUTION[12]

CONSERVATION STATUS & DISTRIBUTION

Current Conservation Status

Queensland: Endangered[1]

Former Distribution & Status[8]

The former range of *D. m. gracilis* probably included upland rainforest over the entire Wet Tropics area, extending north to Mt Finnegan near Cooktown and south at least as far as Mt Spec. It should be noted that Spotted-tailed quolls of indeterminate subspecific status have also been recorded from the Mackay rainforests.

Current Distribution[8]

Currently known from only eight isolated sub-populations between Mt Finnegan and the southern Atherton Tablelands.[8] These eight sub-populations are estimated to number approximately 16, 22, 34, 40, 42, 108, 144 and 241 individuals respectively.[8] It no longer appears to be present in SF 268 at Mt Spec, or in cleared and fragmented portions of the Atherton Tablelands, including SF 488, SF 251, SF 650, SF 1245 and SF 104. The status of *D. m. gracilis* in the Mackay rainforests is uncertain[8]. It is still recorded in SF 143, SF 144, SF 185, SF 391, SF 607, SF 605, SF 756, SF 758, TR 165 and TR 140.[8] The largest populations are in SF 144, 143 and 185.[8]

THREATS & MANAGEMENT

INTRODUCTORY COMMENT

D. m. gracilis is the most at risk of north Queensland's rainforest mammals, largely as a result of habitat loss, habitat fragmentation, habitat modification and illegal killing. The quoll has naturally high death rates and low population densities and additional deaths from human related causes can have a significant effect on the species.[4] Currently all known populations are located within the Wet Tropics World Heritage Area, and are mostly in State forests and timber reserves. Although this habitat is now protected from timber harvesting, *D. m. gracilis* is still threatened by the impacts associated with roads. Some quoll sub-populations are critically small at present, and are threatened with extinction in the next 50 years unless known and potential threats are ameliorated.

CONSERVATION & RECOVERY PLANS

Recovery Plan in preparation.[10]

THREATENING PROCESSES

1. Clearance and fragmentation of habitat.[4]
2. Habitat modification.
3. Illegal killing at poultry pens.[4]
4. Deaths by roadkills.[4]

POSSIBLE THREATENING PROCESSES

1. Deaths from feeding on Cane Toads.[6]
2. Disease transmitted by feral pigs, dogs and cats.[4]

PROTECTIVE MEASURES FOR OPERATIONS CONDUCTED UNDER THE *FORESTRY ACT 1959*

OBJECTIVE: Protect *D.m.gracilis* and maintain its habitat.

ACTION 1: Other than for essential roads, fire breaks and infrastructure, no clearing is to occur in rainforest above 400 m in SF 756 and SF 758, or above 900 m altitude in other State forests and timber reserves where *D.m.gracilis* occurs.

ACTION 2: Cooperate in any reafforestation projects on private land that link current *D. m. gracilis* populations with habitat in isolated State forests.

ACTION 3: Cooperate with any Environmental Protection Agency (EPA) initiative to foster greater tolerance of *D. m. gracilis* by private landholders adjacent to State forests, and to develop methods to minimise the quoll's impact on poultry.

ACTION 4: DNR and Department of Primary Industries Forestry (DPI-F) staff are to notify the appropriate DNR district office of any quolls found dead on any road through, or on the boundary of, a State forest or timber reserve.

ACTION 5: Where 2 road kills are recorded on a 10 km section within a 12 month period, of a State forest or timber reserve road, district officers should strategically place appropriate fauna warning signs and 40 km night time speed limit signs on the road. Requests for placement of warning signs on other gazetted and constructed roads through or on the boundary of State forests or timber reserves, should be made to the responsible authority for the road.

COMMENT: Decommissioning of B-road on the Mt Windsor Tableland and the Mt Lewis Rd above 900 m is recommended.

ACTION 6: Where possible control or eradicate feral pigs, toads, dogs and cats in areas where *D. m. gracilis* occurs. Please consult with the district DNR Land Protection Officer for appropriate control or eradication procedures.

COMMENT: *D. m. gracilis* may be at risk from either direct or secondary poisoning from baits

REFERENCES AND INFORMATION SOURCES

1. *Nature Conservation (Wildlife) Regulation 1994.*

2. **Burnett, S (in prep., 1995)** The ecology of the Spotted-tailed quoll *Dasyurus maculatus gracilis* in north Queensland. I. Study site and population ecology. Chapter 2 in Burnett, S. The ecology of a suite of tropical Australian rainforest carnivores with particular reference to the Spotted-tailed Quoll. PhD thesis, James Cook University of Nth. Queensland (J.C.U.N.Q.).

3. **Edgar, R. (1983).** The Spotted-tailed quoll pp. 18-19 in Strahan, R (ed.) The Australian Museum complete book of Australian mammals. Angus and Robertson, Sydney.

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10. **Burnett, S. (in prep., 1995)** Spotted-tailed quoll, *Dasyurus maculatus gracilis* recovery plan. Marsupial and monotreme action plan.

11. **Burnett, S.** Used with permission.

12. **Queensland DPI Forestry (1995)** Map prepared by Mapping & Geographic Information Services from information supplied by S. Burnett.

AUTHOR AND DATE OF COMPILATION: S. Burnett, James Cook Uni.; A. Borsboom, Resource Sciences Centre, DNR. Nov. 1995.
FIRST REVIEW: Dr. G. Smith, Resource Sciences Centre, DNR.
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