

## Supplementary material for

### Evaluating the use of thermal imaging cameras to monitor the endangered greater bilby at Astrebla Downs National Park

*John Augusteyn*<sup>A,D</sup>, *Anthony Pople*<sup>B</sup> and *Maree Rich*<sup>C</sup>

<sup>A</sup>Queensland Parks and Wildlife Service and Partnerships, PO Box 3130, Red Hill, Qld 4701, Australia.

<sup>B</sup>Biosecurity Queensland, Ecosciences Precinct, GPO Box 267, Brisbane, Qld 4001, Australia.

<sup>C</sup>Queensland Parks and Wildlife Service and Partnerships, PO Box 202, Longreach, Qld 4730, Australia.

<sup>D</sup>Corresponding author. Email: [john.augusteyn@des.qld.gov.au](mailto:john.augusteyn@des.qld.gov.au)

#### Appendix S1 Images from the thermal image cameras



Image of a juvenile bilby at approximately 70m from the vehicle using the “white” = hot mode.



Image of an adult bilby taken at approximately 50m from the vehicle using the “white” = hot mode.

Appendix S2 Photographs of the different habitats surveyed at Astrebla in 2014



Dense Mitchell grass on a clay plain, Mooradonka transect



A clay plain with an ashy surface adjacent to the Mooradonka transect



A coolabah-lined creek adjacent to a section of the Kite Drive transect



A button grass grassland with a shallow drainage channel in the background, East Talgoo on the Mooradonka transect (photo by Maree Rich (MR))



A clay plain with deep cracks. Backwards Creek is visible in the distance



A clay plain exhibiting a self-mulching surface, an ashy soil with deep cracks, near Mooradonka Waterhole

Appendix S2 Photographs of the different habitats surveyed at Astrebla in 2016, a very dry year with the exception of a few areas in the southern section of the Park



An ashly clay plain south of Curica Creek that had received recent rainfall



An ashly clay plain along the Kite Drive transect that did not receive as much rainfall as south of Curica Creek



An open grassland on ashly clay plain on the Paraputcheri transect (MR)



A sparsely vegetated ashly clay plain with gundabluie shrubs adjacent Talgoo Creek, Mooradonka transect (MR)



An ironstone flat on a sparsely vegetated clay plain at the start of Paraputcheri transect (MR)



A clay plain with moderate stone cover adjacent to Backwards Creek, Ninu transect (MR)

All photographs were taken by John Augusteyn unless marked otherwise

Appendix S3 Complete list of fauna and the number observed at Astrebla in 2014

Species	spotlight	thermal	total
Australian bustard		6	6
Australian owlet-nightjar	1		1
Australian pratincole	96		96
Brown falcon	1		1
Brown quail		12	12
Budgerigar	30		30
Cat	4		4
Central bearded dragon		1	1
Eastern barn owl	2		2
Fat-tailed dunnart	4	14	18
Flock bronzewing	4	2	6
Forrest's mouse		4	4
Greater bilby	1	7	8
Kowari	1		1
Letter-winged kite	23		23
Little button quail	1	1	2
Masked woodswallow	20		20
Myall snake	1	2	3
Nankeen kestrel	3	2	5
Plains-wanderer		1	1
Red kangaroo	1	3	4
Stripe-faced dunnart		1	1
Wedge-tailed eagle	2	1	3
White-browed woodswallow	10		10
Zebra finch	10		10
Grand Total	215	57	272

\* Some birds were only recorded once per transect. This was due to the sheer number of pratincoles in the landscape and the extra time that it would have taken to record their numbers.

Appendix S4 Complete list of species and number of species encountered on transects in 2015

Species	Spotlight Kite Drive	Thermal Kite Drive	Thermal Mooradonka	Spotlight Mooradonka	Thermal Curica Ck	Thermal Paraputcheri	Thermal Ninu	Total
Cat	1	1	1		1		1	5
Eastern barn owl							1	1
Fat-tailed dunnart	3	5	9	4	8	4	1	34
Forrest's mouse			3		1		2	6
Greater bilby	1	2	40	26	4	5	18	96
King brown snake							1	1
Kowari	1	1	1	1	5			9
Letter-winged kite	1				1			2
Little button quail					1	1		2
Long-haired rat			1					1
Myall snake							1	1
Stripe-faced dunnart	1	2			1	3	5	12
Western taipan							1	1
Wild Dog	2							2
Grand Total	9	11	56	31	21	12	31	171

Appendix S5 Complete list of species encountered on transects in 2016

	Spotlight	Thermal	Thermal	Thermal	Spotlight	
	Kite Drive	Kite Drive	Ninu	Mooradonka	Mooradonka	Total
Australian pratincole		1				1
Brown falcon	1					1
Cat	1				3	4
Chirping froglet					1	1
Fat-tailed dunnart			2	5		7
Flock bronzewing			1		4	5
Forrest's mouse		6	6	2		14
Gibberbird			1			1
Greater bilby	7	7	30	111	52	207
Inland dotterel		3			1	4
Kowari					2	2
Letter-winged kite	1		1			2
Little button quail	1	2				3
Myall snake					1	1
Nankeen kestrel					1	1
Red Kangaroo		1		1		2
Sandy inland mouse			1	1		2
Small mammal	2	5	13	12	1	33
Spotted grassfrog				1		1
Stripe-faced dunnart		5		5		10
Wedge-tailed eagle					1	1

Appendix S6 Complete list of fauna referred to in text, including class, accepted common name, scientific name and conservation status in Queensland (NCA) and federally (EPBC). Source: Wildnet August 2018 sorted alphabetically by class and common name.

Class	Common Name	Scientific Name	NCA	EPBC
amphibians	chirping froglet	<i>Crinia deserticola</i>	C	
amphibians	spotted grassfrog	<i>Limnodynastes tasmaniensis</i>	C	
birds	Australian bustard	<i>Ardeotis australis</i>	C	
birds	Australian owl-nightjar	<i>Aegotheles cristatus</i>	C	
birds	Australian pratincole	<i>Stiltia isabella</i>	C	
birds	brown falcon	<i>Falco berigora</i>	C	
birds	brown quail	<i>Coturnix ypsilophora</i>	C	
birds	budgerigar	<i>Melopsittacus undulatus</i>	C	
birds	eastern barn owl	<i>Tyto delicatula</i>	C	
birds	flock bronzewing	<i>Phaps histrionica</i>	C	
birds	gibberbird	<i>Ashbyia lovensis</i>	C	
birds	inland dotterel	<i>Charadrius australis</i>	C	
birds	letter-winged kite	<i>Elanus scriptus</i>	C	
birds	little button-quail	<i>Turnix velox</i>	C	
birds	masked woodswallow	<i>Artamus personatus</i>	C	
birds	nankeen kestrel	<i>Falco cenchroides</i>	C	
birds	plains-wanderer	<i>Pedionomus torquatus</i>	V	CE
birds	wedge-tailed eagle	<i>Aquila audax</i>	C	
birds	white-browed woodswallow	<i>Artamus superciliosus</i>	C	
birds	zebra finch	<i>Taeniopygia guttata</i>	C	
mammals	cat	<i>Felis catus</i> <sup>#</sup>		
mammals	fat-tailed dunnart	<i>Sminthopsis crassicaudata</i>	C	
mammals	Forrest's mouse	<i>Leggadina forresti</i>	C	
mammals	greater bilby	<i>Macrotis lagotis</i>	E	V
mammals	kowari	<i>Dasyuroides byrnei</i>	V	V
mammals	long-haired rat	<i>Rattus villosissimus</i>	C	
mammals	red kangaroo	<i>Osphranter rufus</i>	C	
mammals	sandy inland mouse	<i>Pseudomys hermannsburgensis</i>	C	
mammals	stripe-faced dunnart	<i>Sminthopsis macroura</i>	C	
mammals	wild dog* <sup>#</sup>	<i>Canis lupus</i>		
reptiles	central bearded dragon	<i>Pogona vitticeps</i>	C	



reptiles	king brown snake	<i>Pseudechis australis</i>	C
reptiles	myall snake	<i>Suta suta</i>	C
reptiles	western taipan	<i>Oxyuranus microlepidotus</i>	C

---

\* dingo *Canis lupus dingo*, dog *Canis lupus familiaris* and or dingo/dog crosses

# introduced species

Status: C= Least Concern, V = Vulnerable, E = Endangered, CE = Critically Endangered