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Wildlife Drone Surveys at Fig Tree Hill – Ecological Report

REPORT PREPARED FOR LENDLEASE PTY LTD
WILD CONSERVATION - KANE DURRANT & CHAD BERANEK - 23RD AUGUST 2021

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Summary

Wild Conservation was engaged by Lendlease Pty Ltd to undertake drone-based wildlife monitoring, with the primary target species being the koala, across the 480 hectares of the Fig Tree Hill development site and 290 hectares in reserves (including Beulah Bush, Browns Bush and Noorumba Reserve) for comparison. In total, 19 koalas were detected across the entire survey area. Of these, 11 were detected in Browns Bush on the eastern side of Appin Road, four were detected in Beulah Bush and three were detected in Noorumba Reserve. One koala was detected within scattered paddock trees in the south of the Fig Tree Hill development site. There were two adult female koalas detected with back young. An additional two threatened species were detected: the grey-headed flying fox (*Pteropus poliocephalus*) and the glossy black cockatoo (*Calyptorhynchus lathami*). Detection probability was determined to be high, as repeat surveys of Beulah Bush and Noorumba Reserve yielded similar results to initial surveys, with only one koala being missed in the second survey. We conclude that eight koalas occur west of Appin Road in and adjacent to the Fig Tree Hill development site (including the reserve systems) and determine that this is a robust baseline population estimate. This will be important for monitoring population trajectory in light of development and conservation management for the future.

Introduction

Wild Conservation was engaged by Lendlease Pty Ltd to undertake drone-based wildlife surveys to locate koalas on the Fig Tree Hill development site and adjacent reserves, in order to determine the population size and density. This is important to establish a base-line population estimate so that this can be monitored during the process of development and to determine if conservation and restoration actions are benefiting the population. It is also important to record areas of usage by the koala population and areas that may need enhancement for future survival.

The International Union for Conservation of Nature currently considers the koala **(***Phascolarctos cinereus*) as 'Vulnerable' (Woinarski and Burbidge 2016), a listing that is reflected across Australian federal and state departments for New South Wales, Queensland and the Australian Capital Territory (McAlpine et al. 2015). The current conservation status of the koala is the result of pressure from European settlement in Australia which has resulted in estimated population reductions of more than 50% (Reed and Lunney 1990, Melzer et al. 2000). The remaining koala populations now face both local and regional extinction in some areas of NSW (Lunney et al. 2002, Lunney et al. 2014) due to both anthropogenic drivers (e.g. habitat loss, dog attack, road injury) and biological drivers (e.g. wildfire, disease) of decline (Lunney et al. 2002, Lunney et al. 2007, McAlpine et al. 2015). These drivers of decline have the capacity to be encouraged or intensified by land clearing and climate change (Lunney et al. 2014, McAlpine et al. 2015). In light of this, it is important for developers to understand the populations of faunae that inhabit proposed sites, so a best practice approach can be delivered during the project.

The koala is an inherently cryptic arboreal marsupial which makes monitoring difficult, and due to this difficulty, many different survey methods have been developed (Melzer et al. 2000, Cristescu et al. 2015). Although we now have reasonably well-developed ideas about

koala tree preferences (Phillips and Callaghan 2000, Phillips et al. 2000, Matthews et al. 2007) and koala habitat maps (Lunney et al. 1998, Lunney et al. 2000, Lunney et al. 2009, Callaghan et al. 2011, Law et al. 2017), presence/absence monitoring techniques cannot obtain information on population size and density. With increases in technology and investigations of new ideas, many novel detection techniques of koalas have been discovered, which may lead to new methods of estimating density (Cristescu et al. 2015). This includes the use of passive acoustic monitoring, training dogs to be able to lead surveyors to koala scats and the use of drone technology to fly thermal imaging cameras to detect heat signatures (Cristescu et al. 2015, Law et al. 2018, Corcoran et al. 2019, Beranek et al. 2020).

Out of the promising emerging techniques for surveying koala populations, drones with mounted thermal cameras appears to be the most flexible, cost effective and promising (Corcoran et al. 2019, Beranek et al. 2020, Witt et al. 2020, Howell et al. 2021). This technology has been used to locate koalas for studies that require capture, for pre-logging operations and for situations where accurate information on density and population size are needed. It is important to couple thermal drone detections with an on-ground team to verify sightings, should data not be biased towards one species or another. Large possums and even roosting birds can appear to be koalas to a drone pilot, so it is necessary to mitigate this margin of error with a follow up real time sighting.

Koalas are known to occur in the general region of Campbelltown, but specifics of population size and use of the habitat within Fig Tree Hill are notional. Here we report the results of baseline drone surveys carried out for the detection of koalas in June/July 2021 at Fig Tree Hill. We also report other species detected during the drone surveys via spotlighting during detection validation.

Methods

Study site

The Fig Tree Hill development site is located in the suburb of Gilead, which lies between Wedderburn and Menangle, NSW and is bounded to the east by Appin Road and to the west by the Nepean River (GPS of the site: -34.130542, 150.774482). Much of the site is composed of cleared paddocks and is currently used for livestock agriculture. The clearing dates back to the 1800s and more recently the 1960s. The site is divided east to west by a heritage-listed canal. There are remnant stands of native Cumberland Plain Woodland and Cumberland Plain Transitional Woodland that lie along Woodhouse Creek, Menangle Creek and the Nepean River. There are larger intact stands of native remnant vegetation within Noorumba Reserve (located to the north east of the site), Beulah Bush (located to the south east of the site) and Browns Bush (located to the east on the opposite side of Appin Road). The reserve systems were also of interest for surveys to determine the population size in the surrounding areas of the Fig Tree Hill property.

The area was broken up into 10 units, with each comprising of one night of drone surveys (see Table 1 and Figure 1). Two of the sites were surveyed twice to gain inference on the detection probability of koalas via drone.

Table 1. Details of drone missions. n = number of repeat surveys.

Site	Description	n	Dates surveyed	Surface area (ha)
F1	North-west western portion of site.	1	27/06/2021	61
F2	North-western portion, adjacent to the Nepean River.	1	28/06/2021	41
F3	South-western portion, adjacent to Nepean River	1	29/06/2021	71
F4	Middle of site, portion closer to the Nepean River	1	01/07/2021	99
F5	Middle of site, portion closer to Appin Road	1	02/07/2021	98
F6	Beulah Bush	2	05/07/2021, 12/07/2021	66
F7	Noorumba Reserve	2	06/07/2021, 13/07/2021	56
F8	Along Menangle Creek and scattered paddock trees south of Noorumba Reserve.	1	11/07/2021	110
F9	Browns Bush – north	1	14/07/2021	73
F10	Browns Bush - south	1	15/07/2021	95
			Total:	770

Figure 1. Map of the drone flight paths as plotted on Google Earth.

Drone surveys

The drone survey protocol followed the method described in (Beranek et al. 2020). We deployed a DJI drone; the Mavic 2 Enterprise Advance. Flights were made to follow a lawn mower pattern with 20% overlap and were constructed as kml files on Google Earth Pro. Each flight path was uploaded onto a DJI smart controller. Flights were nominally 65 m above ground level (AGL) but varied due to terrain. Terrain following was used in the Browns Bush sites (F9 and F10) to account for high topographic variability. The thermal imager (13 mm lens) was set to high gain (-25° to 135℃) and colour and thermal video (MP4) video recordings were simultaneous. Each flight lasted around 23 – 25 minutes until the battery needed to be changed, where each mission required 6 – 8 full charged batteries. Flights were suspended if wind resistance exceeded 10 m/s and at no time did the altitude exceed 120 m. Flight speed for most flights was 5 m/s to minimise motion blur and provide maximum coverage.

The Australian Civil Aviation Safety Authority requires remote pilots to maintain a visual line of sight (VLOS) at all times and to be able to orient the aircraft. Therefore, the drone was fitted with a high intensity strobe navigation light that has a range of over 5.5 km at night and at least 2 km in daylight. However, maintaining VLOS when flying above the forest canopy can be problematic as nearby foliage obscures the aircraft. To mitigate this, a 10.5 m elevated boom lift (Genie TZ-34/20) was used to elevate the pilot close to the canopy top.

Thermal detection verification

An in-field validation protocol was followed since error can occur when trying to identify species from thermal signatures (Corcoran et al. 2019). Manual verification was achieved by an on ground team that navigated to the location of each detection with head-torches and a spotlight. A photo was taken for all detections and are attached in the appendix of this report. Photos were not possible for some detections due to logistical issues.

Results

Overall, seven species of fauna were detected, which comprised of two species of birds and five mammals (see Table 1). In total, there were 19 individual koalas detected. Of these, eight were found within the area surveyed to the west of Appin Road (including F6 - Beulah Bush and F7 - Noorumba Reserve). Of the koalas west of Appin Road, majority were found within the reserve systems (F6 - Beulah Bush = four and F7 - Noorumba Reserve = three), while one was found in scattered paddock trees within the south-east portion of F4. No koalas were found west of the canal. A further 11 koalas were found on the eastern side of Appin Road in Browns Bush. Repeat surveys of F6 – Beulah Bush and F7 – Noorumba Reserve resulted in similar numbers of koala detections.

Two koalas were observed to have back young/pouch young. One was located within F4 and the other was located within Beulah Bush.

There were two additional threatened species detected, the grey-headed flying fox and the glossy black cockatoo. Grey-headed flying foxes were detected via drone at almost half of the sites. Most were observed active or foraging on large-leaf privet (*Ligustrum lucidum*) or on the flowers of iron-barked eucalypts (e.g. *Eucalyptus cebra*). However, at one detection in unit F2, there were 28 individuals adjacent to the Nepean River that were presumed to be roosting (GPS: -34.124745, 150.756421). A pair of night-roosting glossy black cockatoos were detected in unit F10 (Browns Bush north, GPS of detection: -34.132586, 150.796998).

Table 1. Species list. * indicates that a female with a back young/pouch young was detected during the survey. Total indicates the maximum abundance across site, i.e. the maximum of repeat surveys as a site are used.

Common Name	Species name	F1	F2	F3	F4	F5	F6 S1	F6 S2	F7 S1	F7 S2	F8	F9	F10	Total
Roosting birds	Aves	0	0	0	0	0	0	0	1	0	1	0	0	2
Southern boobook	*Ninox boobook*	0	0	0	0	0	0	1	0	0	0	0	0	1
Glossy black cockatoo	*Calyptorhynchus lathami*	0	0	0	0	0	0	0	0	0	0	0	1	1
Sugar glider/Squirrel glider	*Petaurus sp.*	0	0	0	0	0	1	0	0	1	0	0	0	2
Koala	*Phascolarctos cinereus*	0	0	0	1*	0	4*	4*	3	2	0	10	1	19
Ring-tailed possum	*Pseudocheirus peregrinus*	0	0	0	0	0	0	0	0	2	0	0	0	2
Grey-headed flying fox	*Pteropus policocephalus*	0	1	0	0	2	0	0	0	1	0	0	1	5
Brush-tailed possum	*Trichosurus vulpecula*	5	7	3	1	0	8	5	0	0	1	2	1	18

There were four tree species that the koalas were found using based off 26 koala detections (including detections of the same individual on repeat surveys). Most were observed in either grey gum (*Eucalyptus punctata*, 11) or grey box (*Eucalyptus moluccana*, 9), however some were detected in ironbark Eucalypts (either *E. fibrosa* or *E. crebra*, 4) and spotted gum (*Corymbia maculata*, 2). See figure 2.

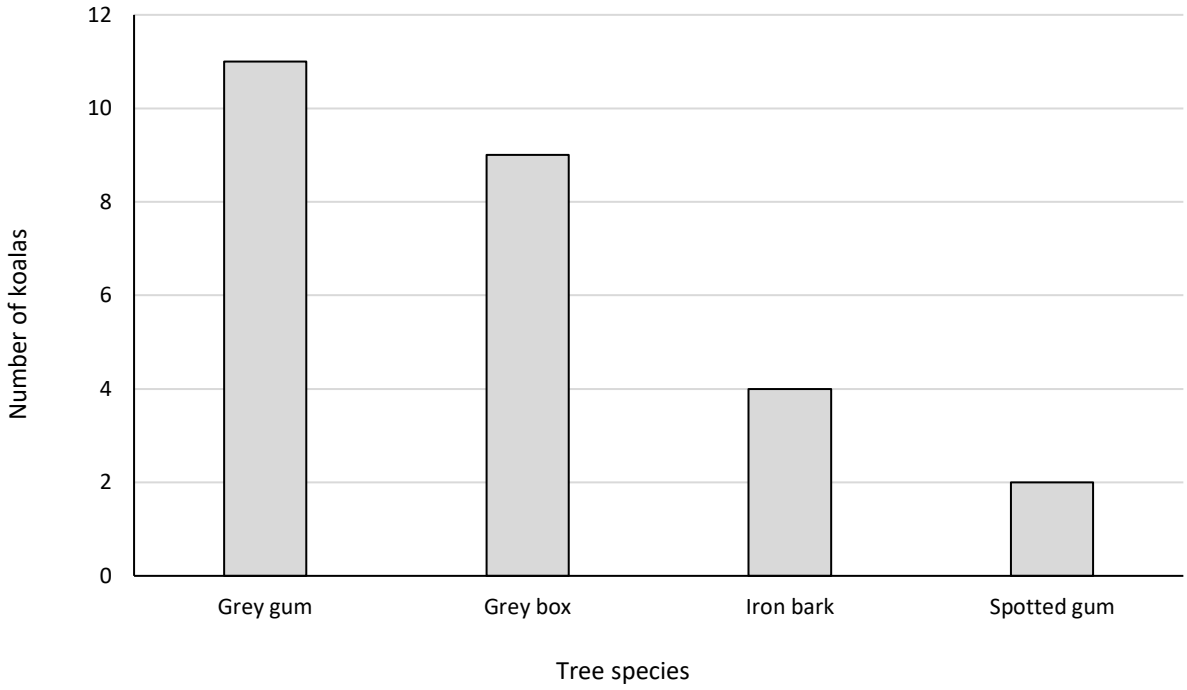

Figure 2. Tree species use overview of koalas detected via drone.

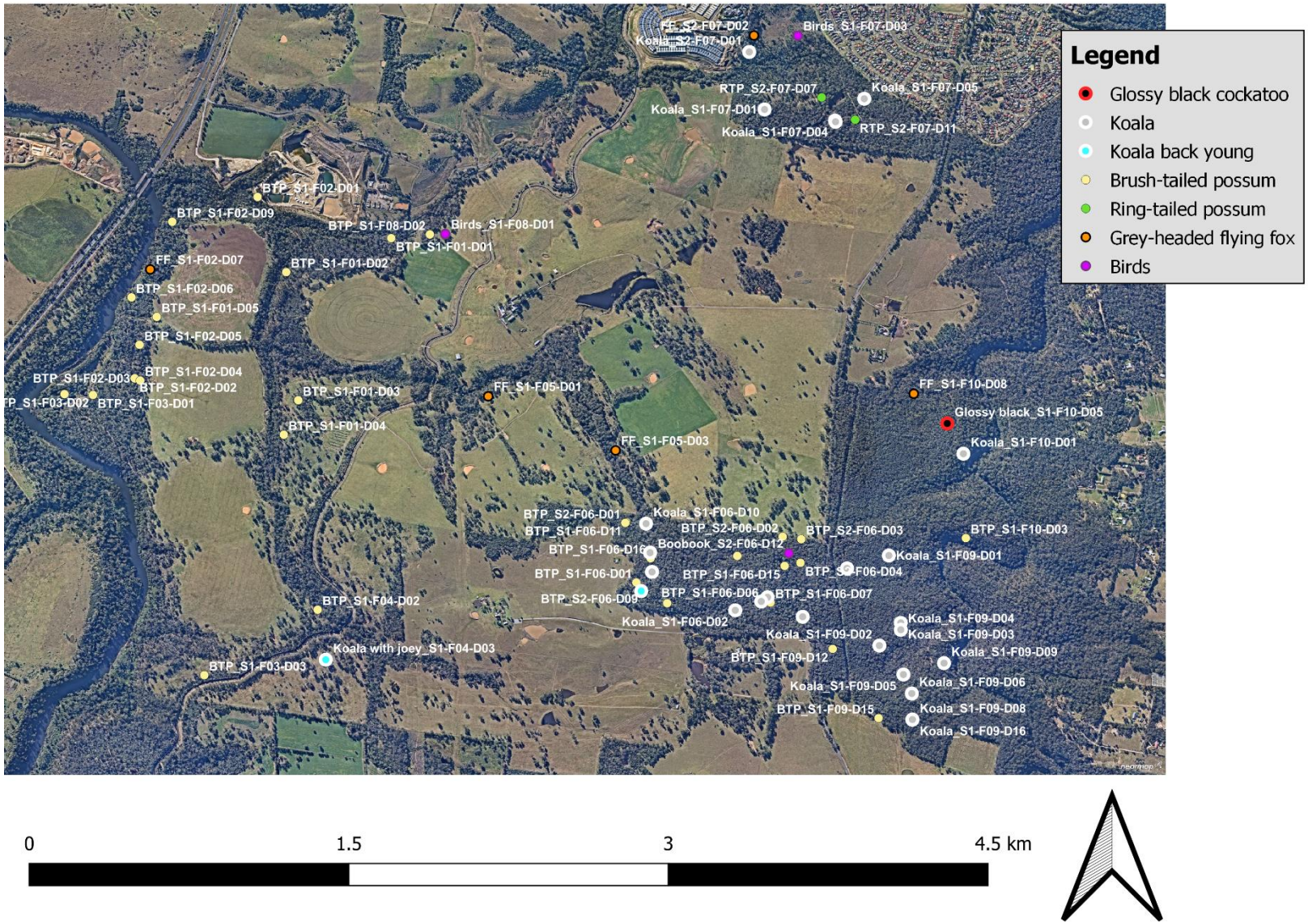

Figure 3. Map of detections.

Discussion

Here we demonstrate that at least eight koalas use habitat on the Fig Tree Hill side of Appin Road (when including Beulah and Noorumba Reserves). With only one of these being found on the site proper. This individual was a female with back young found at F4. The nursing female was detected by drone and confirmed by the validation team. She was then checked over several return visits but had moved on after a second detection. The area was flown again approximately one week later to try and track her but to no avail. It is the opinion of our team that she moved into Nepean Creek or into the neighbouring property to the south.

During our surveys, no koalas were detected in Woodhouse Creek, other than those in Beulah Reserve. An additional 11 were detected in Browns Bush on the east side of Appin Road. This sets a baseline population size of 19 in the survey area, with two adult females observed with joeys. This information is useful to inform management strategies for this population.

It is possible that the heritage listed canal acts as a dispersal barrier for koala movement on the site as no koalas were detected west of this structure. There is a corridor that has been noted where koalas may travel under the canal at Woodhouse Creek but being that the habitat is more suitable on the east, and that the landscape and creek are both narrow and steep at this point, it is difficult to ascertain whether koalas frequent this area. Further monitoring of this population barrier will be useful to formulate a management plan. Most koalas were detected in areas with large extents of high-quality remnant Cumberland Plain Woodland and Cumberland Plain Transitional Forest. Only one koala was detected in areas with scattered paddock trees. These results emphasise the importance of protecting areas with large extents of koala woodland, such as Beulah and Noorumba Reserves.

Two other threatened species were detected during the surveys, the grey-headed flying fox (*Pteropus policocephalus*) and the glossy black cockatoo (*Calyptorhynchus lathami*). The former species was found throughout the area and were most often observed actively feeding. However, one detection led to the discovery of a potential roost on the Nepean River. The glossy black cockatoos were a surprise finding and were detected in Browns Bush. These results highlight the importance of the current remnant woodland as a source of habitat for threatened species.

Our results validate the use of in-field validations of thermal signatures (Beranek et al. 2020). There were numerous detections of brush-tailed possums (*Trichosurus vulpecula*) which have thermal signatures that are difficult to distinguish from the thermal signature of a koala (Corcoran et al. 2019). Identifying thermal signatures without in-field validation is likely to lead to spurious results, which may eventuate in uninformed management decisions to the detriment of the koala.

Furthermore, we highlight the fact that repeated surveys are beneficial to produce greater accuracy and precision in population estimates, as we saw during our repeats of Beulah and Noorumba Reserves. While drone surveys have a higher detection rate than traditional techniques for koalas (Witt et al. 2020), the detection rate is not 100% and there are factors that may influence the probability of detection of an individual (Corcoran et al. 2021). Repeated surveys allows the possibility of modelling the detection probability and

accounting this into density/population estimates which can lead to more accurate and precise results and allows the calculation of confidence intervals (Royle and Nichols 2003). Disregarding the use of modelling approaches and repeated surveys allows for the potential to detect animals that may have been missed in previous surveys.

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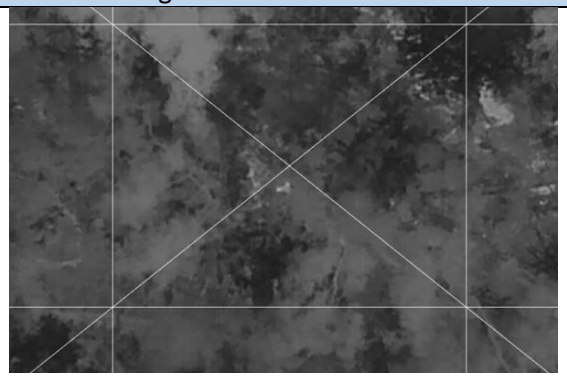
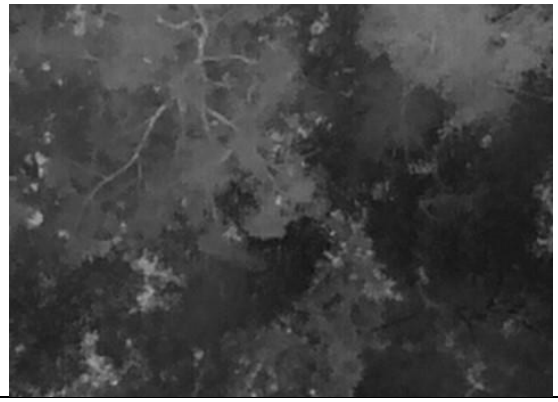
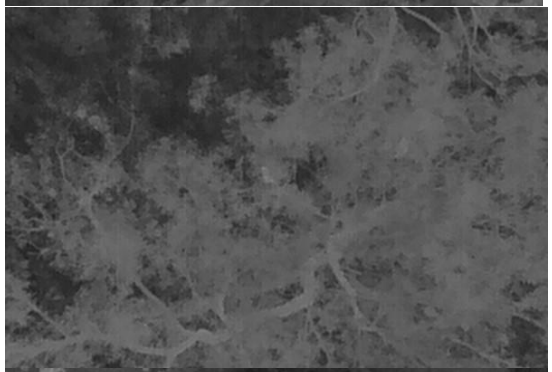
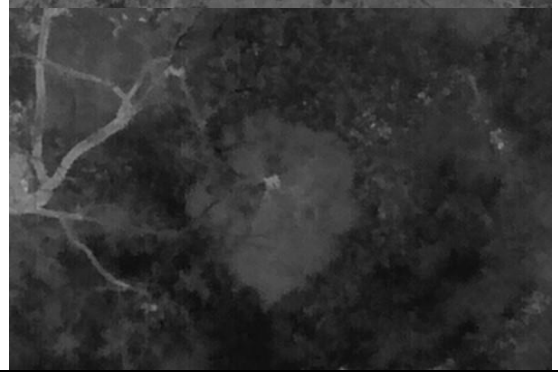
Appendix 1. Detection images. *T. v.* = brush-tailed possum (*Trichosurus vulpecula*), *P. p.* = grey-headed flying fox (*Pteropus poliocephalus*), *P. sp.* = glider (*Petaurus* sp. either sugar or squirrel glider), *Ps. p.* = ring-tailed possum (*Pseudocheirus peregrinus*), P. *c.* = koala (*Phascolarctos cinereus*), *N. b.* = southern boobook (*Ninox boobook*), *C. l.* = glossy black cockatoo (*Calyptorhynchus lathami*), * = back young/pouch young. Shaded rows highlight koala detections.

Detection	Sp.	Date	Latitude	Longitude	Thermal image	On-ground photo
S1-F01-D01	*T. v.* Brush-tailed possum	27/06/2021	- 34.123152	150.768688		
S1-F01-D02	*T. v.* Brush-tailed possum	27/06/2021	- 34.124880	150.763344		

S1-F01-D03	*T. v.* Brush-tailed possum	27/06/2021	- 34.131402	150.763956		
S1-F01-D04	*T. v.* Brush-tailed possum	27/06/2021	- 34.133161	150.763222		
S1-F01-D05	*T. v.* Brush-tailed possum	28/06/2021	- 34.127161	150.756754		

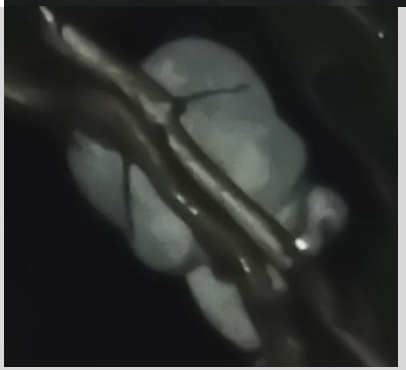
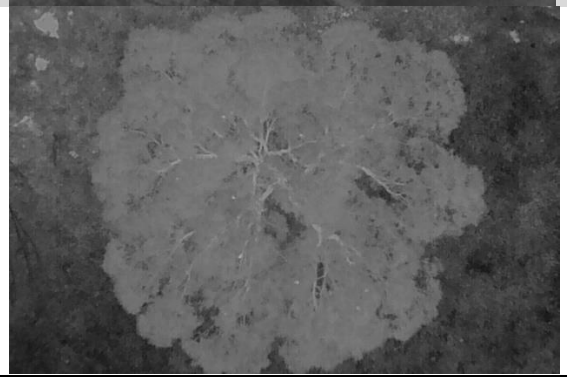
S1-F02-D01	*T. v.* Brush-tailed possum	28/06/2021	- 34.121055	150.761887		
S1-F02-D02	*T. v.* Brush-tailed possum	28/06/2021	- 34.130310	150.755633		
S1-F02-D03	*T. v.* Brush-tailed possum	28/06/2021	- 34.130290	150.755632		

S1-F02-D04	*T. v.* Brush-tailed possum	28/06/2021	- 34.130403	150.755910		
S1-F02-D05	*T. v.* Brush-tailed possum	28/06/2021	- 34.128580	150.755877		
S1-F02-D06	*T. v.* Brush-tailed possum	28/06/2021	- 34.126166	150.755467		

S1-F02-D07	*P. p.* Grey headed flying fox	28/06/2021	- 34.124745	150.756421		
S1-F02-D08 Brush-tailed possum	*T. v.* Brush-tailed possum	28/06/2021	- 34.124783	150.757206		
S1-F02-D09 Brush-tailed possum	*T. v.* Brush-tailed possum	28/06/2021	- 34.122317	150.757541		

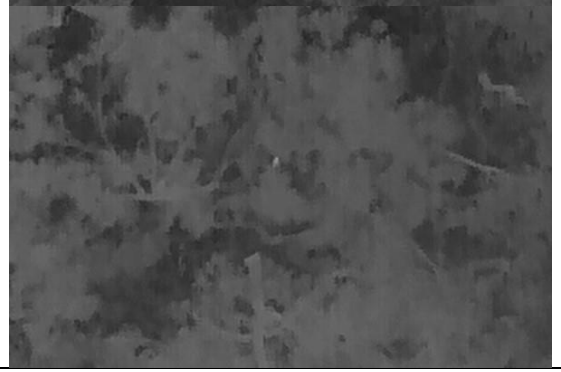
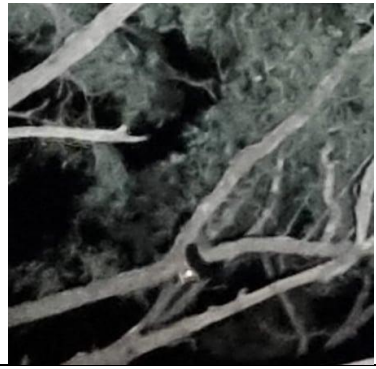
S1-F02-D10	Nest	28/06/2021	-34.120718	150.761085		
S1-F02-D11	*V. u.* Common wombat	28/06/2021	-34.123648	150.762613		
S1-F03-D01	*T. v.* Brush-tailed possum	29/06/2021	-34.131134	150.753507		

S1-F03-D02	*T. v.* Brush-tailed possum	29/06/2021	- 34.131093	150.752057		
S1-F03-D03	*T. v.* Brush-tailed possum	30/06/2021	- 34.145400	150.759173		
S1-F04-D01	Hollow	1/07/2021	- 34.140953	150.764615		

S1-F04-D02	*T. v.* Brush-tailed possum	1/07/2021	- 34.142069	150.764945		
S1-F04-D03	*P. c.** Koala	1/07/2021	- 34.144612	150.765358		
S1-F05-D01	*P. p.* Grey headed flying fox with roosting white winged chough	2/07/2021	- 34.131204	150.773629		

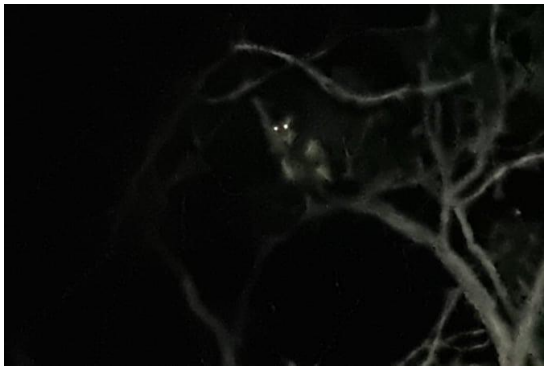
S1-F05-D02	*P. p.* Grey headed flying fox	2/07/2021	- 34.129386	150.778226		
S1-F05-D03	*P. p.* Grey headed flying fox	3/07/2021	- 34.133958	150.780111		
S1-F06-D01	*T. v.* Brush-tailed possum	5/07/2021	- 34.140681	150.781170		

S1-F06-D02	*P. c.* Koala	5/07/2021	- 34.142097	150.786206		
S1-F06-D03	*P sp.* Glider sp.	5/07/2021	- 34.141662	150.783274		
S1-F06-D04	*T. v.* Brush-tailed possum	5/07/2021	- 34.141737	150.782738		

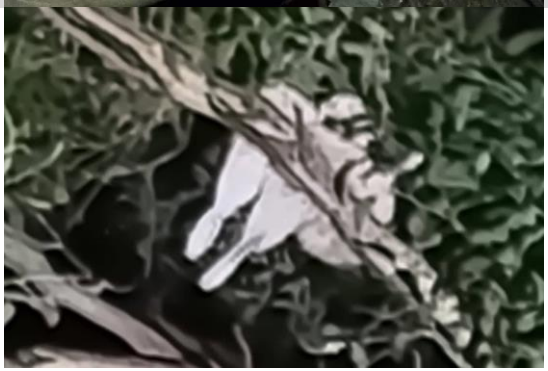
S1-F06-D05	*P. c.* Koala	5/07/2021	- 34.142427	150.789636		
S1-F06-D06	*T. v.* Brush-tailed possum	5/07/2021	- 34.141653	150.787612		
S1-F06-D07	*T. v.* Brush-tailed possum	5/07/2021	- 34.141703	150.788000		

S1-F06-D08	*P. c.* Koala	5/07/2021	- 34.141433	150.787848		
S1-F06-D09	NA Detection moved on	5/07/2021	- 34.140740	150.787574		
S1-F06-D10	*P. c.* Koala	6/07/2021	- 34.137686	150.781664		

S1-F06-D11	*T. v.* Brush-tailed possum	6/07/2021	- 34.137614	150.780654		
S1-F06-D12	*T.v.* Brush-tailed possum	6/07/2021	- 34.138817	150.785872		
S1-F06-D13	*T.v.* Brush-tailed possum	6/07/2021	- 34.139416	150.787641		

S1-F06-D14	*T. v.* Brush-tailed possum	6/07/2021	- 34.139330	150.786307		
S1-F06-D15	*T. v.* Brush-tailed possum	6/07/2021	- 34.139838	150.788719		
S1-F06-D16	*T. v.* Brush-tailed possum	6/07/2021	- 34.139449	150.781892		

S1-F07-D01	*P. c.* Koala	6/07/2021	-34.116600	150.787696		
S1-F07-D02	NA	6/07/2021	-34.117285	150.787606		
S1-F07-D03	Birds	6/07/2021	-34.112844	150.789387		
S1-F07-D04	*P. c.* Koala	6/07/2021	-34.117166	150.791285		

S1-F07-D05	*P. c.* Koala	6/07/2021	- 34.116055	150.792772		
S1-F08-D01	Birds	11/07/2021	- 34.122940	150.771441		
S1-F08-D02	*T. v.* Brush-tailed possum	11/07/2021	- 34.122961	150.770658		

S1-F08-D03	*P.p.* Grey headed flying fox	11/07/2021	- 34.115063	150.783667	
S1-F08-D04	*T.v.* Brush-tailed possum	11/07/2021	- 34.114984	150.785152	
S1-F08-D05	*Roosting birds*	11/07/2021	- 34.129169	150.783127	

S1-F08-D06	*T.v.* Brush-tailed possum	11/07/2021	- 34.131801	150.787042		
S2-F06-D01	*T. v.* Brush-tailed possum	12/07/2021	- 34.137646	150.780605		
S2-F06-D02	*T. v.* Brush-tailed possum	12/07/2021	- 34.138351	150.788616		

S2-F06-D03	*T. v.* Brush-tailed possum	12/07/2021	- 34.138476	150.789563		
S2-F06-D04	*T. v.* Brush-tailed possum	12/07/2021	- 34.139683	150.789523		
S2-F06-D05	*T.v.* Brush-tailed possum	12/07/2021	- 34.140247	150.782154		

S2-F06-D12	*N. b.* Southern boobook	12/07/2021	- 34.139194	150.788933		
S2-F06-D06	*T.v.* Brush-tailed possum	12/07/2021	- 34.141933	150.788010		
S2-F06-D07	*P. c.* Koala	12/07/2021	- 34.141650	150.787528		

S2-F06-D08	*P. c.** Koala	12/07/2021	- 34.141117	150.781417		
S2-F06-D09	*T. v.* Brush-tailed possum	12/07/2021	- 34.141073	150.781479		
S2-F06-D10	*P. c.* Koala	12/07/2021	- 34.140146	150.781967		

S2-F06-D11	*P. c.* Koala	12/07/2021	- 34.139164	150.781869	
D1-F06-D11	*P. c.* Koala Next day survey	13/07/2021	- 34.139164	150.781869	
D1-F06-D10	*P. c.* Koala Day survey	13/07/2021	- 34.140146	150.781967	

S2-F07-D01	*P. c.* Koala	13/07/2021	- 34.113675	150.786917		
S2-F07-D02	*P. p.* Grey headed flying fox	13/07/2021	- 34.112834	150.787156		
S2-F07-D03	16 x birds/bats	13/07/2021	- 34.117284	150.78773		

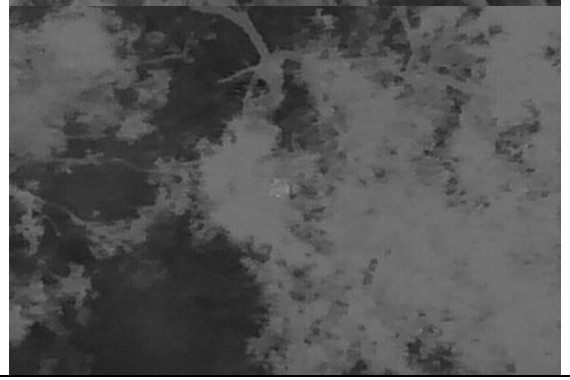
S2-F07-D04	2 x Roosting birds	13/07/2021	-34.117045	150.788149	
S2-F07-D05	2 x Roosting birds	13/07/2021	-34.117118	150.780140	
S2-F07-D06	2 x Roosting birds	13/07/2021	-34.119578	150.789512	

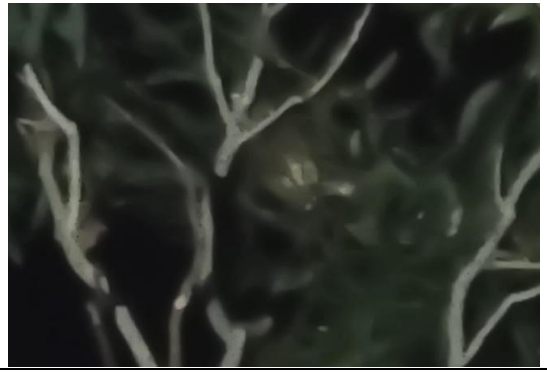
S2-F07-D07	*Ps. p.* Ring tailed possum	13/07/2021	- 34.115986	150.790604	
S2-F07-D08	*P. sp.* Glider sp.	13/07/2021	- 34.112928	150.787147	
S2-F07-D09	*P. c.* Koala	13/07/2021	- 34.117228	150.791311	

S2-F07-D10	Probable Glider Moved on	13/07/2021	- 34.115080	150.791690		
S2-F07-D11	*Ps. p.* Ring tailed possum	13/07/2021	- 34.117122	150.792309		
S2-F07-D12	*P.p.* Grey headed flying fox	13/07/2021	- 34.118792	150.795263		

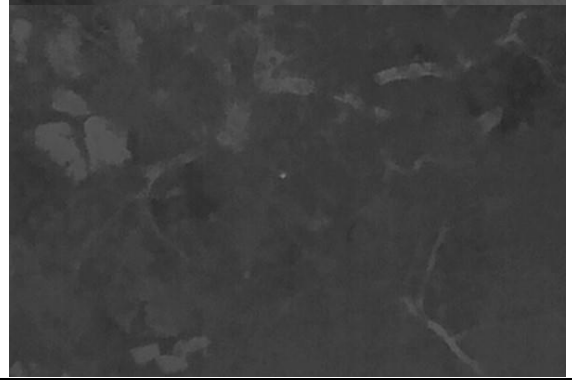
S1-F09-D01	*P. c.* Koala	14/07/2021	- 34.139310	150.794025		
S1-F09-D02	*P. c.* Koala	14/07/2021	- 34.143893	150.793542		
S1-F09-D03	*P. c.* Koala	14/07/2021	- 34.142739	150.794630		

S1-F09-D04	*P. c.* Koala	14/07/2021	-34.143089	150.794630		
S1-F09-D05	*P. c.* Koala	14/07/2021	-34.145368	150.794765		
S1-F09-D06	*P. c.* Koala	14/07/2021	-34.146334	150.795193		

S1-F09-D07	Possible tawny frog mouth	14/07/2021	-34.140501	150.795888		
S1-F09-D08	*P. c.* Koala	14/07/2021	-34.147668	150.795222		
S1-F09-D09	*P. c.* Koala Cliffside	14/07/2021	-34.144788	150.796832		

S1-F09-D10	*P.c.* Koala	14/07/2021	-34.147567	150.797226		
S1-F09-D11	2 x Small animal	14/07/2021	-34.142100	150.797586		
S1-F09-D12	*T. v.* Brush-tailed possum	15/07/2021	-34.144063	150.791164		

S1-F09-D13	*P. c.* Koala	15/07/2021	- 34.139961	150.791893		
S1-F09-D14	*T.v.* Brush-tailed possum	15/07/2021	- 34.141909	150.792162		
S1-F09-D15	*T. v.* Brush-tailed possum	15/07/2021	- 34.147589	150.793502		

S1-F09-D16	*P. c.* Koala Likely previous detection S1 – F09 - D10	15/07/2021	-34.147659	150.795221		
S1-F09-D17	Unable to verify	15/07/2021	-34.149566	150.796657		
S1-F10-D01	*P. c.* Koala	15/07/2021	-34.134128	150.797819		
S1-F10-D02	Roosting bird	15/07/2021	-34.138921	150.799913		

S1-F10-D03	*T.v.* Brush-tailed possum	15/07/2021	-34.138422	150.797944		
S1-F10-D04	NA Off cliff face	15/07/2021	-34.138401	150.797047		
S1-F10-D05	*C. l.* Glossy black cockatoo pair	15/07/2021	-34.132586	150.796998		

S1-F10-D06	2 x Roosting birds	15/07/2021	-34.128173	150.796620		
S1-F10-D07	2 x Gliders	15/07/2021	-34.129789	150.796517		
S1-F10-D08	*P. p.* Grey headed flying fox	16/07/2021	-34.131073	150.795293