Koala Monitoring Program

Yarrabilba Priority Development Area

Koala Capture / Monitoring Event November 2019

Summary Report

Picture of Nyunga ascending an ironbark.

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Introduction

This report presents the latest findings from the Koala Monitoring Program that has been implemented for the Yarrabilba Priority Development Area by the Koala Ecology Group (University of Queensland) in partnership with Austecology. The Koala Monitoring Program has been developed to monitor koala health and use of koala habitat offsets under the Commonwealth's EPBC 2013/6791 Approval.

The *Koala Monitoring Program* comprises three key elements:

1. ***Koala Capture / Monitoring Events*** - This component of the program will involve fieldwork to catch, examine and tag selected koalas for monitoring purposes.
2. ***Koala Monitoring Events*** - This component is designed to track and establish the location of collared koalas in order to visually assess their well-being (using binoculars) as well as their tree use preferences.
3. ***Koala Population Survey Events*** – This component will provide a series of systematic transect searches throughout the full extent of the designated "Fauna Corridor", and the seven EPBCA Offset Areas.

During November 2019 a *Koala Capture / Monitoring Event* was conducted at the Yarrabilba site. The aims of the fieldtrip were to: 1. Radio-track collared koalas to visually check their well-being, 2. Visually check the condition of the tree-mounted LX base stations, 3. Attempt to catch koalas that need health checks/treatment, 4. Deploy all five LX collars, and 5. Search for new koalas at the site.

This report summarises the main findings from the recent koala capture/monitoring event.

Methodology

The koala monitoring event occurred from the 19th – 21st November 2019. The study team comprised three personnel from the Koala Ecology Group (Ben Barth, Bill Ellis, and Sean FitzGibbon) and two from Austecology (Lindsay and Heath Agnew).

At the time of the fieldtrip two koalas were fitted with VHF collars (Kevin and Nyunga) and a further two were carrying ear tag transmitters (Lucky and Heath). These koalas were located by radio-tracking using the unique VHF radio signal emitted from each collar. The two collared koalas were scheduled for recapture to assess their health and check that their collar was still fitting well.

Throughout the fieldtrip, habitat searches were conducted to try and locate new/untagged koalas ("cleanskins") at the site to tag and fit with collars. The nominated target habitat area within EPBCA Offset Area 1 was prioritised for these searches and when a koala was detected, suitability for capture was assessed. Capture attempts were made using the previously described methods, involving a tree climber and a ground support team implementing the extendable pole "flagging" method. Alternatively, we also used the "fence trap" technique where the situation allowed (e.g. isolated tree, flat ground).

Captured koalas were restrained in a cloth bag in a cool location and processed at the site. Processing took approximately 45mins per animal, during which time the koala was briefly anaesthetised (5mins) to facilitate a basic health examination and the collection of body measurements, as well as eye and urogenital swabs for disease testing. Measurements included body weight, head length and width, testes width (males), and an assessment of tooth wear (to age the koala) and body condition (from 1 to 10; 1 = very poor condition, 10 = excellent condition).

Cleanskin koalas were fitted with a coloured ear tag stamped with a unique number, following previous protocols (right ear for females and left for males). A small stainless steel numbered tag was inserted in the opposite ear as back-up identification. It is important to note that the coloured tags are often visible from the ground, permitting easy identification of study animals by anyone that observes a koala at the site. Binoculars would be required if the koala was located high in a tree.

Cleanskin koalas were then fitted with collars to enable them to be radio-tracked (during Koala Monitoring Events) as well as monitored using the online Koala Tracker system (see http://trackkoalas.com.au/ for further information on this koala-specific tracking system). For koalas that were already collared, the collar fit was checked to ensure it was neither too tight nor loose.

After processing, captured koalas were allowed time to fully recover from anaesthesia before being released in the same tree from which they were captured. All procedures were in accordance with our current DES Scientific Purposes Permit and University of Queensland Animal Ethics Certificate.

Results & Discussion

Sixteen independent koalas were sighted during the November 2019 field trip; the locations of these koalas are presented using two figures at different scales (Fig. 1 & 2), for ease of reading. Eight of the observed koalas were already tagged (Kevin, Nyunga, Lucky, Bomber, Heath, Jean, Scarlet, Cain) while the other eight koalas were cleanskins.

The detection of 16 koalas during the fieldtrip represents the highest number of koalas we have seen during any *Koala Capture / Monitoring Event* at the site.

Three of the previously tagged koalas were recaptured (Heath, Bomber, Nyunga). Unsuccessful attempts were made to recapture Cain and Lucky by flagging with poles; we also tried to catch Cain using a fence trap (Fig. 3) but this, too, was unsuccessful.

Two of the eight observed cleanskins were caught and tagged (females Lilly and Millie Mae). Lilly was carrying a late stage back young (named Wooten) that was large enough to be fitted with an ear tag.

Radio-tracking of Kevin revealed that he has dispersed approximately 3.6km from his last known location (near base station 2); he has moved onto private property on the western side of Waterford-Tamborine Road.

No attempt was made to recapture Kevin given his location on private property (see Fig. 2) and the large size of the tree he occupied. He will be monitored closely as part of the monthly *Koala Monitoring Events* to reduce the likelihood that he disperses beyond the detectable distance (based on VHF range) over the summer months. We plan to re-catch Kevin during February/March 2020.

In total, five independent koalas were captured during the November 2019 *Koala Capture / Monitoring Event*. Further details concerning the health and examination of these koalas are provided below, with pictures taken during the fieldtrip. All updated tag and collar details are provided in Appendices 1 and 2.

Swabs collected during the fieldtrip have been sent for laboratory testing to determine if any of the sampled koalas were positive for chlamydia; the test results were not available at the time this report was prepared.

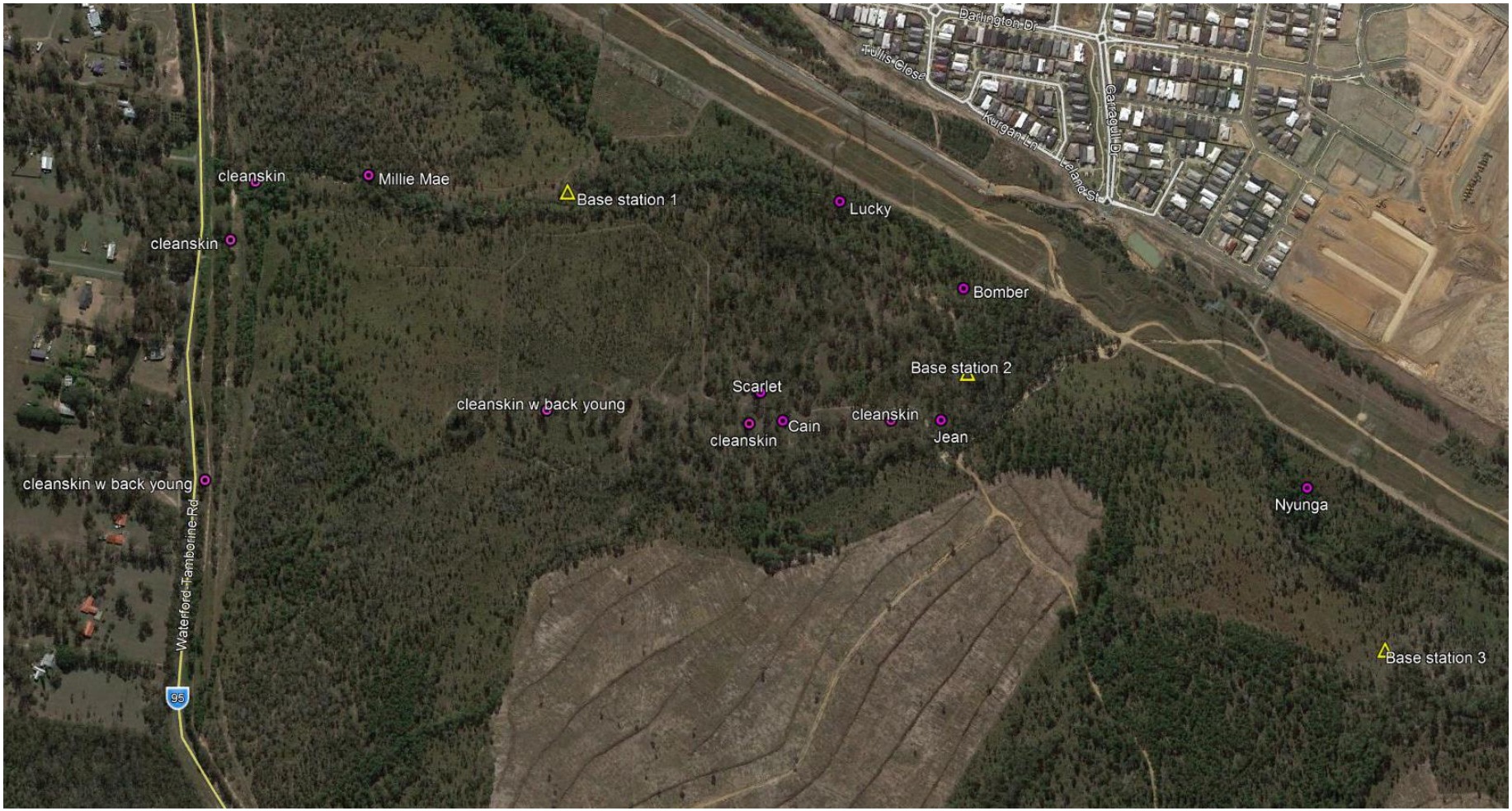

Figure 1. Plot of the initial locations of thirteen of the sixteen koalas that were sighted during the November 2019 fieldtrip. Note: all cleanskins were thought to be different individuals. (Figure 2 shows the locations of the other three sighted koalas).

Figure 2. Plot showing the initial locations of the southern-most three adult koalas (Kevin, Heath, Lilly and her back young Wooten). Kevin has dispersed approximately 3.6km from his last known location near base station 2, and has moved onto private property on the western side of Waterford-Tamborine Road.

Figure 3. Image of the fence trap that was set up to try and catch male koala Cain; an SMS motion-sensor camera (bottom right) was used to send an immediate alert if the koala entered the trap.

Lilly (13307) & offspring Wooten (13308)

This cleanskin female and her offspring were captured from an area of sparsely scattered trees, immediately north of the central haul road (see Fig. 2). The area has been largely cleared of trees, other than a few that have been retained as 'stepping stones' for wildlife to move between more densely vegetated areas.

The mature female was named Lilly, which was one of the community-suggested names. The examination of Lilly revealed she was in fair condition (body score 6/10) and weighed approximately 5.6kg. Her eyes and rump did not show any obvious signs of chlamydial infection; swabs were collected to confirm this from laboratory testing (results pending). Lilly was given a unique coloured tag (White "T3") in her right ear to assist with visual determination of her identity on future fieldtrips.

Lilly was with her late-stage back young (named Wooten), which was sitting in a separate part of the tree canopy. Wooten was captured, examined and fitted with a small metal ear tag ("UQ170"); he weighed 1.4kg.

Lilly was fitted with an LX collar and an ear tag transmitter, the latter of which provides a backup means of tracking the koala should the collar fall off.

It appears that the 'stepping stone' function of the retained scattered trees proved effective for Lilly and her offspring.

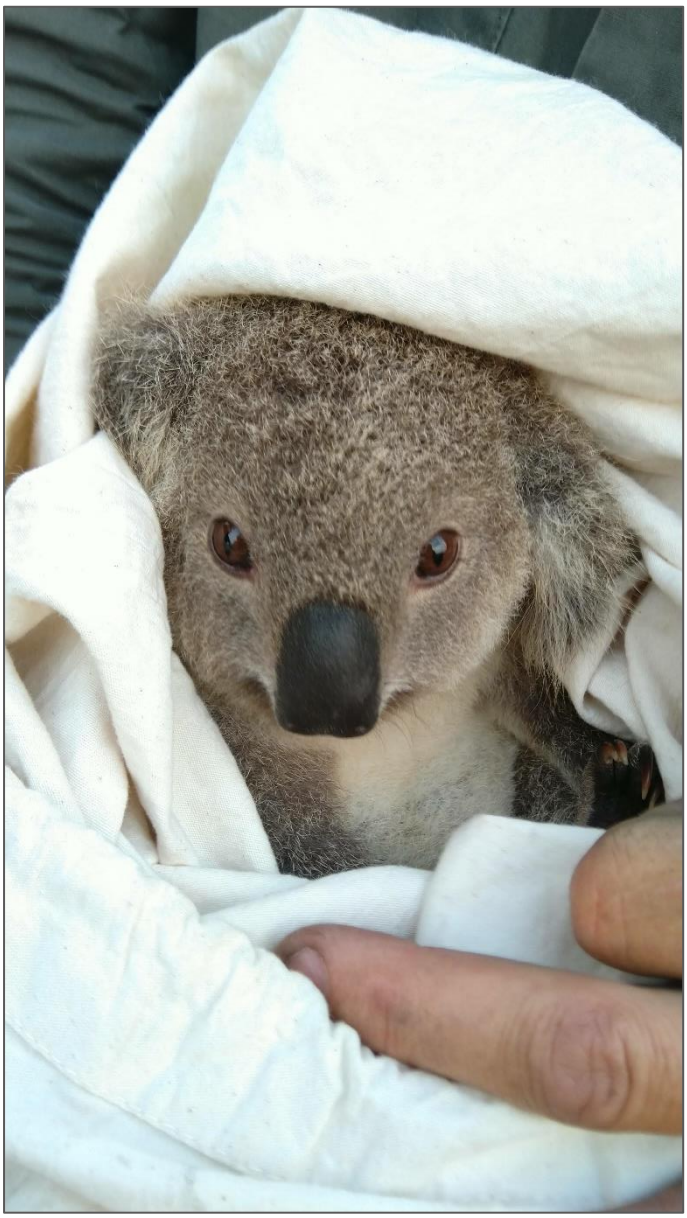

Figure 4. Image of Lilly's male back young, named Wooten, which weighed 1.4kg and was large enough to be fitted with a small ear tag.

Bomber (13008)

The male koala named Bomber was the second koala tagged at the site as part of the current monitoring program, back in May 2017. At that time he was estimated to be more than six years old, suggesting he is approximately 10 years old now. Bomber was last captured in late July 2019, but he dropped his collar in the intervening period. During the recent fieldtrip he was found in a bloodwood tree along Quinzeh Creek during habitat searches by our research team. He was recaptured using flagging poles.

Bomber has lost approximately 1kg since July 2019 (now 8.05kg) and his overall body condition score had decreased (5/10 vs 6/10 in July). This may be the result of the dry spell at the site or due to his older age. Bomber's eyes were clear (Figure 5) and he did not present any obvious signs of disease. Swabs were collected from Bomber's eyes and urethra and sent for laboratory testing (results pending). He was fitted with a standard LX collar and an ear tag transmitter before being released at the point of capture.

Figure 5. Image of Bomber showing that his eyes were clear and free of obvious infection.

Figure 6. Dr Bill Ellis releasing Bomber after examination and collar fitting.

Nyunga (13509)

The young female koala named Nyunga was first captured during May 2019, after being spotted near base station 3. Nyunga weighed only 3.2kg and the state of her pouch (clean, unexpanded) strongly suggested that she had not yet bred. Eye and urogenital swabs collected in May tested negative for *Chlamydia*. Nyunga was estimated to be 1-2 years old and was too small to fit with an LX collar. Instead, this young female koala was fitted with a lightweight VHF-only collar (~30g) so that she could be radio-tracked and her location and health monitored.

During the recent fieldtrip, Nyunga was recaptured. She was still in good condition (body score 7/10) and did not present any signs of chlamydial infection. Nyunga had gained considerable weight since May 2019, having reached 4.4kg. An examination of her pouch revealed that she is currently carrying her first young, which was estimated at 1-2mths old.

Given that Nyunga weighed more than 4kg, her collar was swapped to an LX collar so that her movements can be monitored remotely. She was released at the point of capture up a small ironbark.

Figure 7. Image of Nyunga after fitting with white tag in the right ear; her eyes were clear.

Heath (13007)

Heath was originally discovered on the site during May 2017 when he was a sub-adult male weighing 3.65kg and estimated to be 2-3 years old. When Heath was re-examined in May 2019 his left eye was regarded as having minor inflammation of the conjunctiva, presumably due to chlamydial infection. Laboratory testing of swabs confirmed a heavy chlamydial load in the left eye and a mild infection in the penis/urethra.

In light of Heath's positive test results, and as stated in the previous fieldtrip report (August 2019), we planned to re-catch him during the final fieldtrip and take him into captivity for treatment. On day two of the recent November fieldtrip, Heath was recaptured from a large narrow-leaved blue gum. He was skinny and his rump appeared slightly stained. He was transported to Australia Zoo Wildlife Hospital (AZWH) for thorough veterinary assessment and appropriate treatment.

Following his admission to AZWH, Heath was started immediately on a course of antibiotics. This involves daily injections as well as topical application of eye ointment. Veterinary staff at AZWH have reported that he is not coping well with being in care and his aggressive behaviour is making it difficult to administer his medications. They have also reported that further health concerns have become apparent and that Heath is currently affected by a condition named oxalate nephrosis, whereby renal calcium oxalate deposition occurs in the form of small crystals. This compromises kidney function. Staff at AZWH are doing all they can to treat Heath's numerous health concerns and are keeping our team advised of his current situation.

Millie Mae (13533)

This new (cleanskin) koala was found sheltering in an *Angophora* tree on the northern branch of Quinzeh Creek, at the edge of the cleared area (Fig. 8). She was flagged down after a member of our team climbed the tree and encouraged her to descend to the point where the ground team could reach her with the flagging poles.

Figure 8. Picture showing Millie Mae's position prior to capture (yellow arrow), at the edge of the clearing at the north of the site (view is looking south from the clearing).

Millie Mae was anaesthetised in an air-conditioned caravan on the site to facilitate her examination and tagging/collaring. She was found to be a very large adult female weighing 7.26kg; she was in fair condition (body score 7/10) and had an empty pouch. Her tooth wear suggested she is 4-8 years old so it is presumed that she has bred previously. Her eyes and rump did not show any obvious signs of chlamydial infection; swabs were collected to confirm this from laboratory testing (results pending). Millie Mae was given a unique coloured tag (Green "Q18") in her right ear to assist with visual determination of her identity on future fieldtrips.

Figure 9. Image of Millie Mae during her examination. She is a very large female koala (>7kg); even her nose is large like that of most adult males.

Millie Mae was fitted with an LX collar as well as an ear tag transmitter, and then released at the point of capture. Given her capture location (at the edge of the northern clearing and close to Waterford-Tamborine Road) her movements were monitored closely over the following days using the LX online system. Within two days after capture (23/11/2019) she had crossed Waterford-Tamborine Road; she remained on the western side of the road for many days before she crossed back east onto the site (Fig. 10).

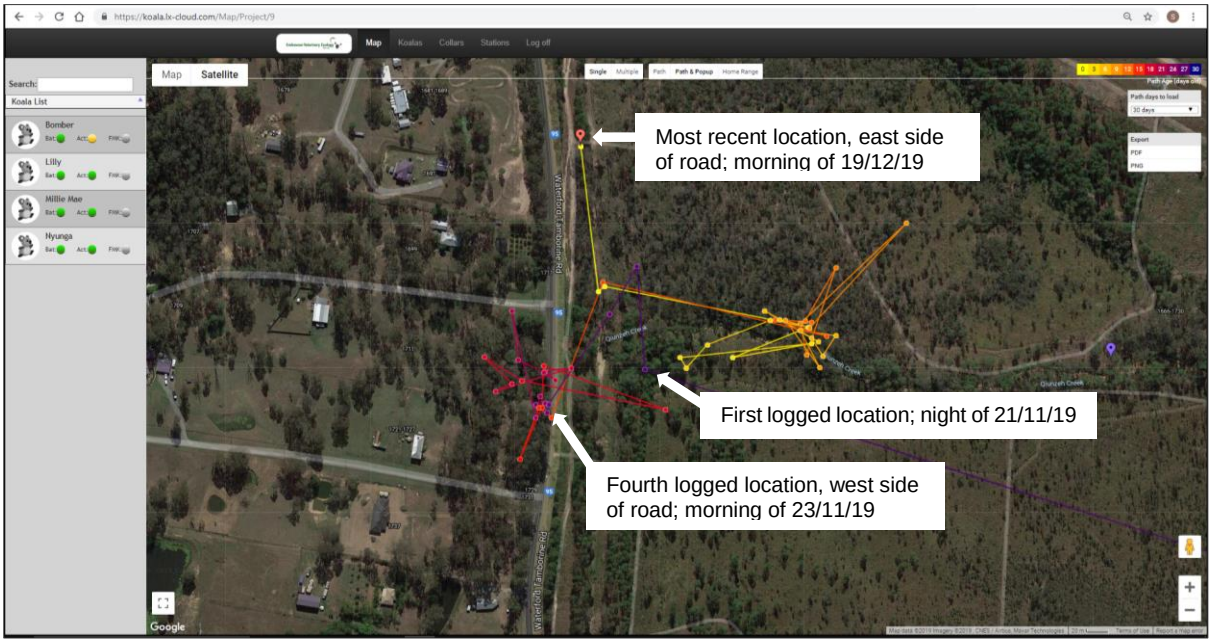

Figure 10. Aerial image from the LX website showing all Millie Mae's logged locations since she was collared on the 21st November 2019 (i.e. almost 30 days of movement). Note: most recent locations are shown as yellow dots and the oldest are purple dots (see colour spectrum top right of image).

Conclusion

The *Koala Capture / Monitoring Event* conducted during November 2019 was the fourth for the year under the adopted Koala Monitoring Program. The following points summarise what was achieved:

- A total of 16 independent koalas were sighted during the fieldtrip, comprising eight that were already tagged (Kevin, Nyunga, Lucky, Bomber, Heath, Jean, Scarlet, Cain) and eight cleanskins.
- Three previously tagged koalas were recaptured (Heath, Nyunga, Bomber).
- Heath was transported immediately to Australia Zoo Wildlife Hospital to commence treatment of his previously detected chlamydial infection.
- Nyunga and Bomber were fitted with LX collars and released at their capture locations.
- Two cleanskins (females Lilly and Millie Mae) were also captured and fitted with LX collars. Lilly was accompanied by a late-stage back young (Wooten) that was also examined and given an ear tag.
- All four LX collars have been successfully uploading to the LX website since deployment in November.
- Radio-tracking of Kevin revealed that he has dispersed approximately 3.6km to private property on the western side of Waterford-Tamborine Road. He will be monitored closely and we will aim to re-catch him during February/March 2020.

At the end of the November 2019 fieldtrip, five koalas were fitted with collars and one additional koala was fitted with an ear tag transmitter only (see Appendices 1 and 2). That is, six koalas are able to be monitored by radio-tracking. This was the fourth and final *Koala Capture / Monitoring Event* for 2019 under the current contract.

Appendix 1. Summary of tag and other details for all koalas captured at the site to date (November 2019). Koalas fitted with transmitters at the end of the November 2019 fieldtrip are highlighted yellow.

UQ #	Name	Sex	Mass	Age	Left ear tag	Right ear tag	1st Capture	Latitude	Longitude	Notes from latest trip (November 2019)
13007	Heath	M	3.83	2+	Orange F10	Yellow H10	17/05/2017	-27.8113490	153.1062150	Recaptured and taken to AZWH for treatment of chlamydial infection
13009	Caitlin	F	5.92	4	Pink 866	Yellow H6	18/05/2017	-27.8219730	153.1313310	Unsighted since first capture
13008	Bomber	M	9.28	5-10	Light Blue 621	Pink 886	18/05/2017	-27.8121970	153.1072190	Recaptured and fitted with LX collar; fair condition.
13486	Jean	F	5.56	3-6	metal UQ800	Orange F15	9/10/2017	-27.8121559	153.1086764	Sighted; not recaptured
13487	Emily	F	1.07	1	metal UQ724	metal UQ789	9/10/2017	-27.8121559	153.1086764	Unsighted since first capture
13488	Cain	M	8.07	2-4	Royal Blue G8	metal UQ796	9/10/2017	-27.8132431	153.1039776	Sighted; not recaptured
13489	Scarlet	F	4.81	1-3	metal UQ753	Royal Blue G14	10/10/2017	-27.8110978	153.1049627	Sighted; not recaptured
13490	Sue-Bob	F	5.66	5-10	metal UQ799	Orange F20	10/10/2017	-27.8122096	153.1063710	Unsighted since de-collared March 2019
13495	Kobe	F	5.06	3-6	metal UQ175	Yellow C20	20/03/2018	-27.8137242	153.1169157	Taken to AZWH; euthanised August 2018

13304	Zara	F	6.17	5-10	Maroon A16	Yellow C4	6/06/2018	-27.8097031	153.1034546	Unsighted since March 2019
13497	Lindsay	M	5.8	2-4	Yellow C10	metal UQ958	10/10/2018	-27.8170122	153.1096012	Unsighted since May 2019
12341	Kevin	M	2.15	1-2	Light Blue B5	Metal UQ991	4/03/2019	-27.811086	153.104432	Sighted; not recaptured. Has dispersed off site
12342	Meghan	F	5.02	3-6	Metal UQ965	Light Blue B3	5/03/2019	-27.818168	153.108581	Unsighted since first capture
13508	Lucky	M	7.4	2-4	Yellow C19	Maroon A19	27/05/2019	-27.809771	153.103803	Sighted; not recaptured. Still carrying ear tag transmitter
13509	Nyunga	F	3.24	1-2	Metal UQ955	White T7	28/05/2019	-27.815716	153.115121	Recaptured and fitted with LX collar; good condition, carrying pouch young
13518	Marlee	F	not weighed	<1	Metal UQ118	-	1/08/2019	-27.812705	153.108693	Back young of Jean; unsighted since first capture
13307	Lilly	F	5.55	4-8	Green E9	White T3	19/11/2019	-27.823554	153.108909	Captured and fitted with LX collar; fair condition; with back young (Wooten)
13308	Wooten	M	1.40	<1	UQ170	-	20/11/2019	-27.823554	153.108909	Back young of Lilly
13533	Millie Mae	F	7.26	4-8	Metal UQ158	Green Q18	21/11/2019	-27.8094187	153.0999413	Captured and fitted with LX collar; fair condition

Appendix 2. Summary of radio frequency details for all koalas fitted with collars/ear tag transmitters at the end of the November 2019 fieldtrip

KOALA	COLLAR FREQ	ON TIME	COLLAR DETAILS	EAR TX FREQ*	EAR TX START	EAR TX EXPIRY
LILLY	149.412	6:00am 12hr	LX collar A4-095	150.592	17/11/2019	31/07/2020
BOMBER	151.383	7:30am 12hr	LX collar A4-069	150.670	17/11/2019	31/07/2020
MILLIE MAE	151.403	7:30am 12hr	LX collar A4-203	150.697	17/11/2019	31/07/2020
NYUNGA	149.0326	6:00am 12hr	LX collar A4-222	-		
KEVIN	151.282	7:30am 12hr	VHF-only collar	-		
LUCKY	-		ear tag trans only	150.550	27/05/2019	8/02/2020

*** ALL EAR TAG TRANSMITTERS ARE CONSTANT TICKERS (I.E. NO DUTY CYCLE) AND HAVE AN ESTIMATED BATTERY LIFE OF 257 DAYS**