Koala Monitoring Program

Yarrabilba Priority Development Area

Koala Capture / Monitoring Event, July 2022

Summary Report

Image: View from the canopy of one of the scattered large trees in an area dominated by regrowth; Yarrabilba July 2022 fieldtrip.

Introduction

This report presents the latest findings from the Koala Monitoring Program that has been implemented for the Yarrabilba Priority Development Area 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 July 2022, our research team conducted a *Koala Capture / Monitoring Event* at the Yarrabilba site. This was the second such event for the year. The aims of the fieldtrip were to 1. Radio-track koalas fitted with transmitters to visually check their well-being, 2. Check that the LX remote monitoring system was functioning correctly and that the solar-powered base stations were free of debris, 3. Search for other tagged and cleanskin koalas to log their locations at the site, and 4. Deploy any available LX tags on captured koalas.

This report summarises the main findings from the July 2022 koala capture/monitoring event.

Methodology

The koala monitoring event occurred from the 11 – 13 July 2022. The research team comprised three personnel from the Koala Ecology Group (Ben Barth, Bill Ellis, and Sean FitzGibbon).

At the start of the fieldtrip, three koalas were fitted with collars (Ella, Gladys & Miso). Two collars had fallen off male koalas (Larabee & Cain) since the previous trip (February 2022). A main aim of the July trip was to get these two LX collars re-deployed. Further, the monthly radio-tracking program revealed that the VHF transmitter fitted to the female Gladys was no longer working. An additional aim of the trip was to replace this transmitter so that Gladys could continue to be located via radio-tracking.

Where possible, koalas fitted with collars or ear tag transmitters were located by radio tracking, using their unique VHF radio signal.

Throughout the fieldtrip, habitat searches were conducted to try to locate new/untagged koalas ("cleanskins") at the site to potentially 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 previously described methods. Koalas were mostly caught using the "flagging" method, whereby a tree climber and a ground support team (2 ppl) use extendable poles with plastic bags on the end, to encourage the koala to descend. Alternatively, the "fence trap" technique may be used 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 30-45mins per animal, during which time the koala was briefly anaesthetised (3-5mins) 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 provided with sufficient resting time to fully recover from anaesthesia before being released in the same tree from which they were captured.

Results & Discussion

During the fieldtrip, seven previously tagged and independent koalas were sighted (1. Cain, 2. Bilba, 3. Ella, 4. Gladys, 5. Scarlet, 6. Zara & 7. Clancy). In addition, numerous cleanskin (untagged) koalas were observed during the trip. Seven observations of cleanskins were made, which comprised at least five different individuals (as these observations were made on the same day). Therefore, the total number of independent koalas sighted during the July 2022 field trip was at least 12 (seven tagged, five cleanskins). The locations of these koalas are presented in Figure 1. One cleanskin was captured and tagged (Brumby).

Six koalas were caught during the July 2022 *Koala Capture / Monitoring Event*, including five tagged individuals (Clancy, Bilba, Ella, Gladys, Scarlet) and one cleanskin (Brumby). We were unable to detect a VHF signal for the small female named Miso, which was collared in February 2022.

No koalas were found within the main fauna corridor (to the south of the main study area) despite this area being thoroughly searched on foot and with a thermal-imaging drone.

Further details concerning the health and examinations of the captured koalas are provided below, with pictures taken during the fieldtrip. All updated tag and transmitter details are provided in Appendices 1 and 2.

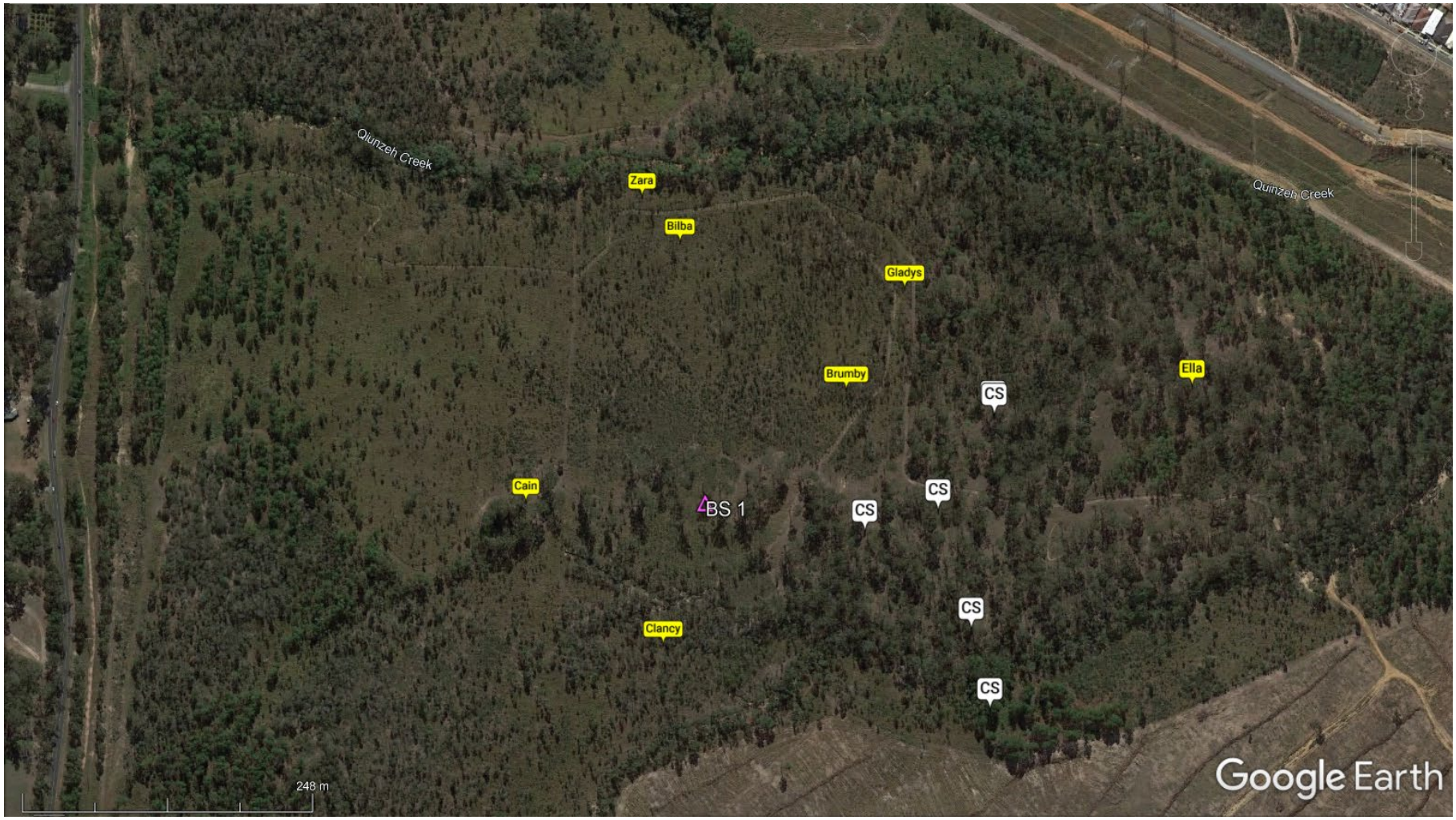


Figure 1. Plot of the locations of koalas sighted in the main study area during the July 2022 fieldtrip (CS = cleanskin; BS = base station).

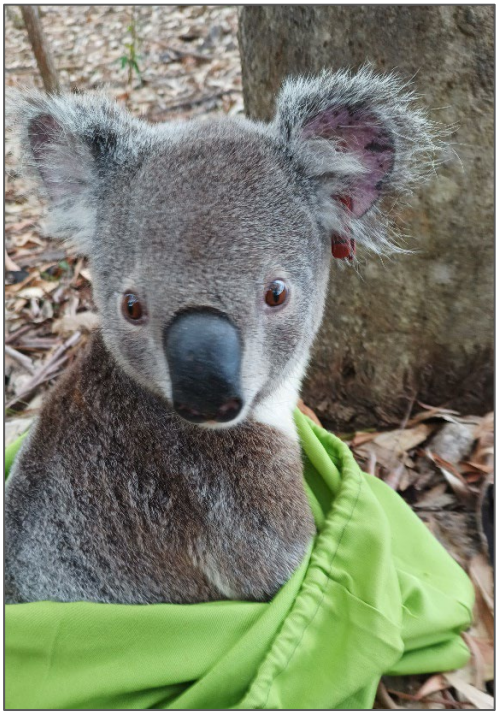
Clancy (13488)

Clancy was first captured in February 2022 and was taken to Australia Zoo Wildlife Hospital (AZWH) for treatment of a severely infected right eye. He was skinny and in poor condition (body score 4/10). Analysis of collected swab samples confirmed Clancy was infected with *Chlamydia*. He was estimated to be 2-4 years old based on tooth wear and weight (5.6kg).

The treatment at AZWH was successful, and Clancy was released back at the site in April 2022 of that year. He was fitted with a VHF tracking collar.

When we radio-tracked Clancy at the start of the July 2022 fieldtrip we found him in a small tree with a huge number of scats at the base. This suggested that Clancy had not been moving much. We flagged him down and noted that he was moving very slowly. He was very subdued when we handled him and gently put him in a cloth catch bag. Upon examination we estimated his body condition score was only 4/10. He felt very skinny with poor muscle tone despite weighing 6.5kg. There was nothing obviously wrong with Clancy and he did not display any overt signs of disease. He was not anaesthetised given his poor condition.

The decision was made to remove the collar from Clancy so that he was not burdened with any weight, and to return him to the tree from which he was captured. Given that he had only recently completed extensive treatment in care at AZWH, we considered it best to leave Clancy in the wild and hope that he would naturally regain health and condition.



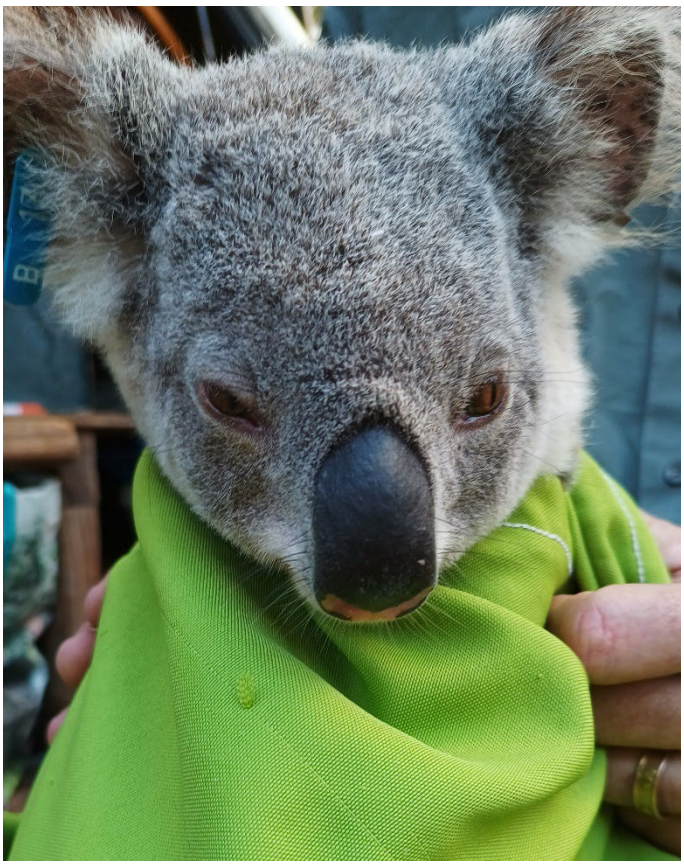
Bilba (13269)

Bilba was first captured and tagged as a sub-adult in November 2020, when she was found with her collared mother, Zara. At that time Bilba was estimated to be 11-12 months old.

During the July 2022 fieldtrip, Bilba was found in a medium-sized narrow-leaved blue gum (*Eucalyptus seeana*). She was captured using the flagging technique and then anaesthetised for examination and swab collection. Bilba weighed 5.2kg and was in good condition (body score 8/10). Her pouch was empty but one of her teats was enlarged and non-lactating, suggesting it was recently used by a young and was now regressing.

Ocular and urogenital swabs were collected from Bilba while she was anaesthetised and later examined in the laboratory. Both left and right eye swabs returned a negative test result, but there was insufficient koala DNA captured on the urogenital swab to test for the presence of *Chlamydia*. This may have been due to the swabs being rubbed too lightly on the epithelial tissue during sampling.

Bilba was fitted with an LX tag (A5-639) and a VHF transmitter for radio-tracking purposes. After her examination, she was allowed sufficient time to recover and was then released at the point of capture.



Ella (13564)

This female koala was first captured and tagged during April 2021, when she was estimated to be between 3-6 years old. At that time, she had a large, semi-independent offspring.

During the July 2022 fieldtrip, Ella was captured from a large ironbark. She weighed 5.8kg and her physical examination suggested she was in good health (body score 7/10). She had no signs of chlamydial infection, and her pouch was empty.

Ella's original coloured ear tag had torn out, so she was fitted with a new tag (orange un-numbered).

Ella was briefly anaesthetised so that swabs could be collected from each eye and her urogenital sinus. These swabs were sent for laboratory PCR analysis. All swabs later returned negative test results, indicating that no *Chlamydia* DNA was detected.

The fit of Ella's collar was checked to ensure it was still appropriate and did not need adjusting. The VHF transmitter on the collar was replaced with a new one, as the aerial on the old one had been snapped off, which greatly reduced transmission of the VHF radio signal (this had been making it hard to radio-track her).

After her examination, Ella was allowed sufficient time to recover from anaesthesia before being released at the point of capture.

Gladys (13558)

Gladys was last caught during the November 2021 fieldtrip, when she was carrying a 940g young on her front (female 13328 'Amelia'). Gladys was in good condition at that stage (7/10). She was recaptured late in the day on 12th July 2022 and had dropped to a body score of 5/10. This was likely due to the rearing of her young which was no longer with her. Gladys' pouch was empty, and she weighed 5.4kg (down from 5.7kg in Nov'21).

Gladys' eyes and rump appeared clear and free of clinical signs of infection. She was briefly anaesthetised so that swabs could be collected from her eyes and urogenital sinus. These swabs were sent for laboratory PCR analysis. One of the eye swabs returned a positive test result, while the other eye and the urogenital swab were negative. The low level of *Chlamydia* DNA that was detected on the positive swab suggests a very mild infection at this stage. It does not warrant treatment in captivity. Rather, Gladys' condition will be monitored during future fieldtrips.

After her examination, Gladys was allowed sufficient time to recover from anaesthesia before being released at the point of capture.

Brumby (13354)

A small, cleanskin female koala (named Brumby) was caught from the gum-topped box regrowth area (Fig. 1). She was too small to fit an LX collar, weighing just 2.9kg. Instead, she was fitted with a lightweight collar containing only a VHF transmitter. Brumby had no tooth wear, suggesting she was between 1-3 years old. Her pouch was empty and had clearly not been used previously. She was fitted with ear tags to enable easy identification in the future.

Brumby was in good condition (BCS 7/10) and showed no obvious signs of disease or inflammation. She was briefly anaesthetised so that swabs could be collected from her eyes and urogenital sinus. These swabs were sent for laboratory PCR analysis. Surprisingly, both left and right eye swabs returned positive test results, while the urogenital swab returned 'no result' suggesting there was insufficient capture of mucosal cell contents. The ocular swabs were both weakly positive and do not warrant taking Brumby into care for antibiotic treatment. Instead, her condition will continue to be monitored during future fieldtrips.

Given her small size, it is likely that Brumby is the offspring of one of the mature females in that area of the study site. She may undergo a dispersal movement in the near future in search of habitat to establish a home range, as has happened previously with some sub-adults that have been monitored at the site. Alternatively, she may have dispersed into the area from another nearby location.

After examination and collaring, Brumby was released at the point of capture.

Scarlet (13489)

Scarlet was one of the first koalas that we caught and tagged at the site, back in October 2017. At that time her tooth wear suggested she was less than 3 years of age. She has remained in the same general area since that time. Despite several attempts to recapture her in the intervening years, Scarlet had not been recaught until the recent fieldtrip (July 2022).

The physical examination showed Scarlet was in good condition (7/10), weighing 6.8kg. In October 2017 she weighed 5kg. Her right ear still carries the original ear tag (royal blue G14), and the left ear has a small metal tag (UQ753). Scarlet's pouch was empty.

Her eyes and rump appeared clear and free of overt signs of infection. She was briefly anaesthetised so that swabs could be collected from her eyes and urogenital sinus. These swabs were sent for laboratory PCR analysis, and all returned negative test results.

Scarlet was fitted with an LX tag (A5-578) and a VHF transmitter. She was allowed time to recover from the anaesthetic before being released back up the tree from which she was caught.

Conclusion

The *Koala Capture / Monitoring Event* conducted during July 2022 was the second for the year, under the modified Koala Monitoring Program. The following points summarise what was achieved:

- A large number of tagged and untagged (cleanskin) koalas were detected during the three-day fieldtrip (12 total).
- Seven previously tagged and independent koalas were sighted (1. Cain, 2. Bilba, 3. Ella, 4. Gladys, 5. Scarlet, 6. Zara & 7. Clancy)
- At least five cleanskins were sighted, one of which was caught and tagged (Brumby).
- No koalas were found within the main fauna corridor despite this area being thoroughly searched on foot and with the thermal-imaging drone.
- The VHF signal for Miso was unable to be detected. This small female koala was fitted with a VHF-only collar in February 2022. It is likley that she has dispersed from the main study area.
- All four LX tags were deployed on koalas. The LX system has continued to perform very well, with regular uploads of each koala's location and activity level.
- LX base station 2 was cleaned and inspected. It was in good condition and needed only minor cleaning of the solar panel.
- At the end of the July 2022 fieldtrip, six koalas were fitted with tracking collars (including Miso; see Appendices 1 & 2).

The next *Koala Capture / Monitoring Event* is scheduled for late November 2022.

Appendix 1. Summary of tag and other details for all koalas captured at the site to date (July 2022). Koalas fitted with transmitters at the end of the most recent fieldtrip are highlighted yellow.

UQ #	Name	Sex	Mass	Age 1st capture	Left ear tag	Right ear tag	1st Capture	Latitude	Longitude	Notes from latest trip (July 2022)
13007	Heath	M	3.83	2+	Orange F10	Yellow H10	17/05/2017	-27.8113490	153.1062150	Previously taken to AZWH; later euthanised.
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	Unsighted.
13486	Jean	F	5.56	3-6	metal UQ800	Orange F15	9/10/2017	-27.8121559	153.1086764	Deceased; found decomposed carcass & ear tag
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	-	metal UQ796 & yellow front / red back	9/10/2017	-27.8132431	153.1039776	Sighted.
13489	Scarlet	F	4.81	1-3	metal UQ753	Royal Blue G14	10/10/2017	-27.8110978	153.1049627	Recaptured; fitted with A5 LX collar
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	Previously taken to AZWH; euthanised August 2018.
13304	Zara	F	6.17	5-10	Maroon A16 front / Green Q18 back	Yellow C4	6/06/2018	-27.8097031	153.1034546	Sighted.
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	Unsighted; presume has dispersed off site beyond tracking detection limits.
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	Unsighted since February 2022.

UQ #	Name	Sex	Mass	Age 1st capture	Left ear tag	Right ear tag	1st Capture	Latitude	Longitude	Notes from latest trip (July 2022)
13509	Nyunga	F	3.24	1-2	Metal UQ955	White T7	28/05/2019	-27.815716	153.115121	Unsighted.
13518	Marlee	F	not weighed	<1	Metal UQ118	-	1/08/2019	-27.812705	153.108693	Unsighted.
13307	Lilly	F	5.55	4-8	Green E9	White T3	19/11/2019	-27.823554	153.108909	Deceased; carcass radio-tracked April 2020. Cause of death uncertain.
13308	Wooten	M	1.40	<1	UQ170 & Blue B19	-	20/11/2019	-27.823554	153.108909	Deceased off-site; reported by RSPCA.
13533	Millie-Mae	F	7.26	4-8	Metal UQ158	Green Q18	21/11/2019	-27.8094187	153.0999413	Unsighted.
13557	Kamala	F	2.47	1	Metal UQ940	Green Q12	10/11/2020	-27.81368903	153.1133787	Unsighted.
13269	Bilba	F	2.08	1	Metal UQ329	Blue B13	10/11/2020	-27.81070544	153.1030701	Recaptured; fitted with A5 LX collar.
13558	Gladys	F	4.93	2-4	Metal UQ939	Maroon A2	11/11/2020	-27.81102459	153.1056022	Recaptured; fitted with new VHF transmitter, same A5 LX tag.
13564	Ella	F	5.23	3-6	Metal UQ934	Orange (no #)	19/04/2021	-27.811320	153.106273	Recaptured; fitted with new VHF transmitter, same A5 LX tag.
13565	Banjo	M	2.54	1	Maroon A3	Metal UQ987	20/04/2021	-27.810577	153.103908	Unsighted.
13316	Jana	F	5.28	5-10	Metal UQ114	Light Blue B16	21/04/2021	-27.815245	153.110754	Unsighted.
13328	Amelia	F	0.74	<1	Metal UQ917	-	22/11/2021	-27.811498	153.104591	Unsighted.
13334	Clancy	M	5.55	2-4	Brown I12	UQ534	14/02/2022	-27.81277532	153.1013763	Recaptured; removed VHF collar.

UQ #	Name	Sex	Mass	Age 1st capture	Left ear tag	Right ear tag	1st Capture	Latitude	Longitude	Notes from latest trip (July 2022)
13332	Miso	F	3.09	1-3	Metal UQ916	Orange (no #)	15/02/2022	-27.81167394	153.1033398	Unable to detect VHF signal.
13333	Larabee	M	4.12	2-3	Orange front / light blue back	Metal UQ952	16/02/2022	-27.81109974	153.1037605	Unsighted.
13354	Brumby	F	2.95	1-3	Metal UQ576	Light blue front / red back (no #)	12/07/2022			Fitted with VHF-only collar.

Appendix 2. Summary of radio frequency details for all koalas fitted with collars at the end of the July 2022 fieldtrip.

Tracking frequencies

Koala	Collar freq	Turn on time	Collar details
Ella	150.761	7:00am 12hr	LX collar A5-549
Bilba	150.581	7:30am 12hr	LX collar A5-639
Gladys	150.662	7:00am 12hr	LX collar A5-617
Scarlet	150.642	7:00am 12hr	LX collar A5-578
Miso	150.063	7:30am 12hr	no LX tag
Brumby	150.682	7:10am 12hr	no LX tag