Koala Monitoring Program

Yarrabilba Priority Development Area

Koala Capture / Monitoring Event, March 2023

Summary Report

Image of a koala at the Yarrabilba study site, taken with a drone-mounted thermal-imaging camera.
March 2023 Koala Capture / Monitoring Event.

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 March 2023, our research team conducted a *Koala Capture / Monitoring Event* at the Yarrabilba site. This was the first 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 March 2023 koala capture/monitoring event.

Methodology

The koala monitoring event occurred from the 27 – 29 March 2023. The research team comprised three personnel from the Koala Ecology Group (Ben Barth, Bill Ellis, and Sean FitzGibbon).

At the start of the fieldtrip, four koalas (Ella, Douglas, Emily & Marlee) were fitted with LX collars and two koalas (Miso & Brumby) were thought to still be fitted with VHF collars. During the previous fieldtrip (Nov'22) the VHF collar signals for Miso and Brumby were unable to be detected. As such, the main aim of the March 2023 *Koala Capture / Monitoring Event* trip was to search for these two koalas (Miso and Brumby) that were fitted with VHF collars in early to mid-2022.

Further, we aimed to radio-track the four koalas that were fitted with LX collars, to visually assess their location and health. This was especially important for the female Ella, who had moved northwards off site through the Quinzeh Creek corridor.

Throughout the fieldtrip, habitat searches were conducted to try to locate new/untagged koalas ("cleanskins") at the site to potentially catch and tag. 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.

Where appropriate, cleanskin koalas were 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 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. Ella, 2. Emily, 3. Larabee, 4. Marlee, 5. Zara, 6. Douglas and 7. Nyunga). In addition, four cleanskin (untagged) koalas was observed during the trip. The locations of these koalas are presented in Figures 1 and 2. Three of the 11 koalas were detected using a thermal-imaging drone.

No koalas were caught during the March 2023 *Capture / Monitoring Event*. However, all koalas were observed through binoculars to visually assess their health. Of the 11 koalas that were sighted, two appeared to have signs of chlamydial infection; the male Larabee and the female Nyunga both had rumps that looked discoloured/slightly stained. No other observed koalas had overt signs of infection. However, it was not possible to obtain good views of the eyes and rump for every individual, due to their height in the tree and obscuring vegetation.

A large portion of the fieldtrip was spent driving roads around the study site in an effort to detect the VHF signals of females Miso and Brumby, which were collared in February 2022 and July 2022, respectively. Both of these koalas were relatively young so it is possible that they dispersed off-site, as has occurred with other young collared koalas previously (Kevin, Wooten, Bilba). Despite searching extensively and over a wide search area, we were unable to detect a VHF signal for either Miso or Brumby.

Various images taken during the fieldtrip are provided below. Current tag and transmitter details are provided in Appendices 1 and 2.

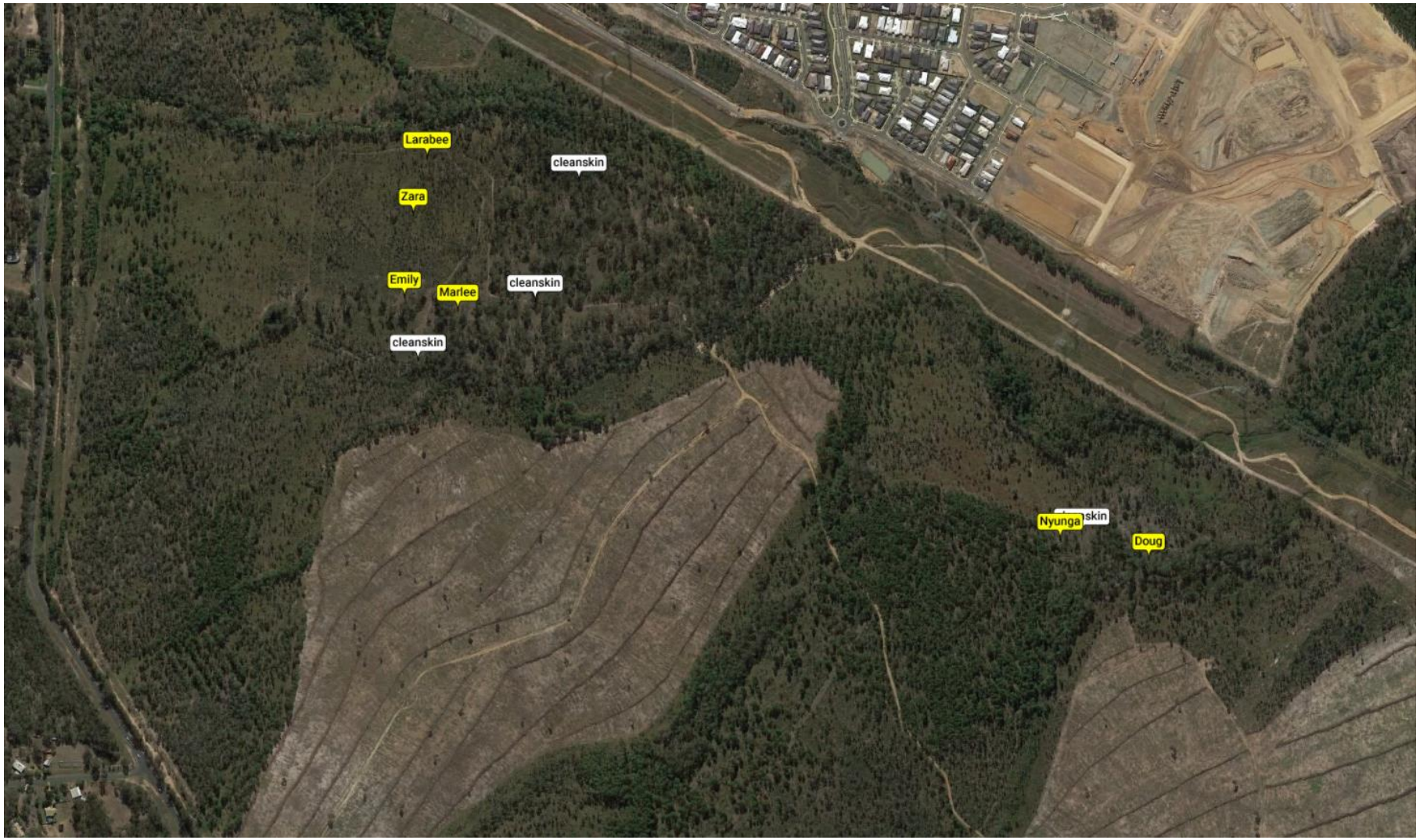

Figure 1. Plot of the location of koalas found on-site during the March 2023 fieldtrip.
Tagged koalas (6) shown with yellow labels, cleanskin koalas (4) shown with white labels.

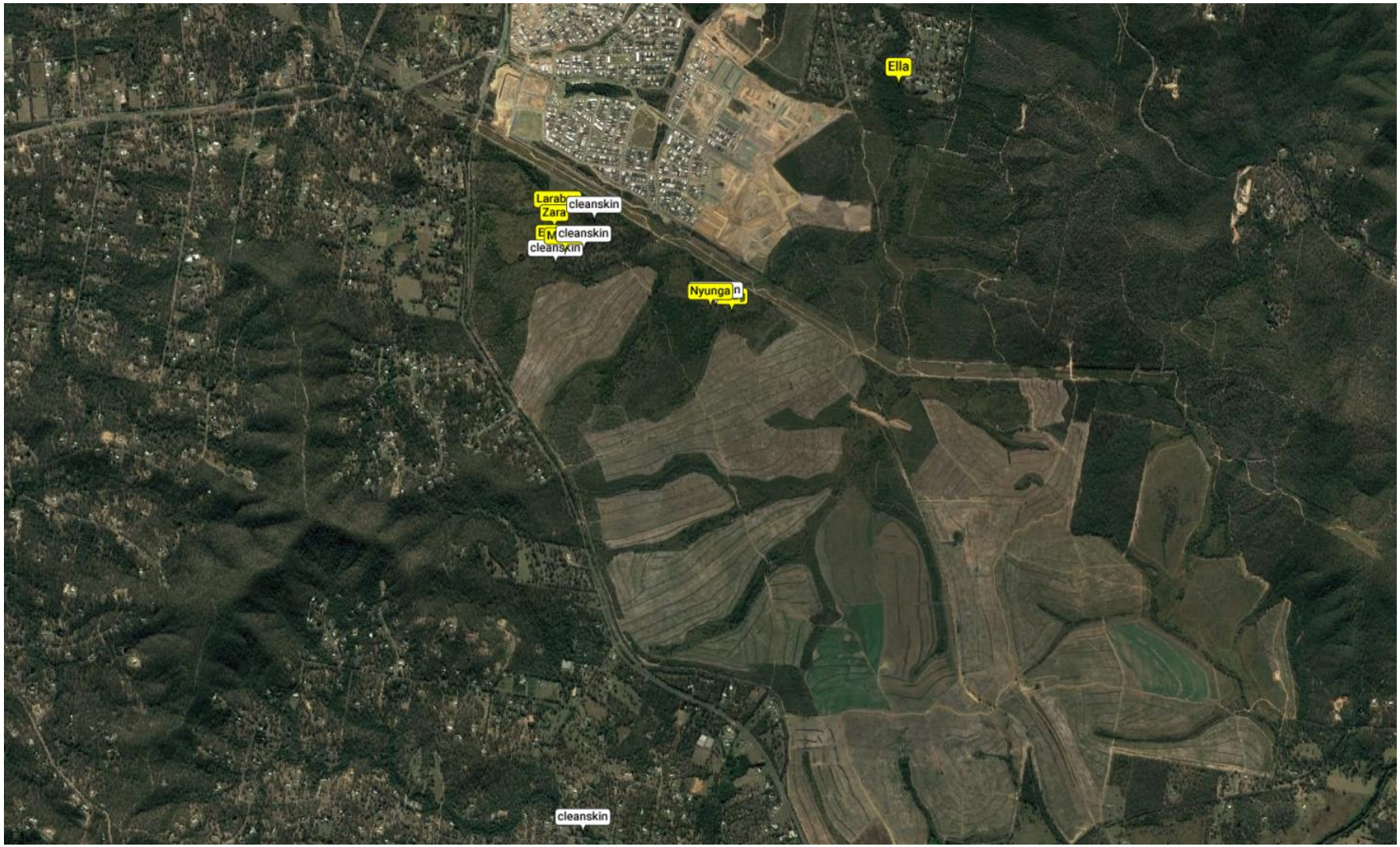

Figure 2. Plot of the location of koalas found on-site and off-site during the March 2023 fieldtrip.
Tagged koalas (7) shown with yellow labels, cleanskin koalas (5) shown with white labels.
Note: The cleanskin shown at the bottom of the image was sighted during off-site searching for Miso and Brumby's VHF signals.

Figure 3. Image of female 13487 'Emily' located high in a gum-topped box (*Eucalyptus moluucana*), during the March 2023 fieldtrip.

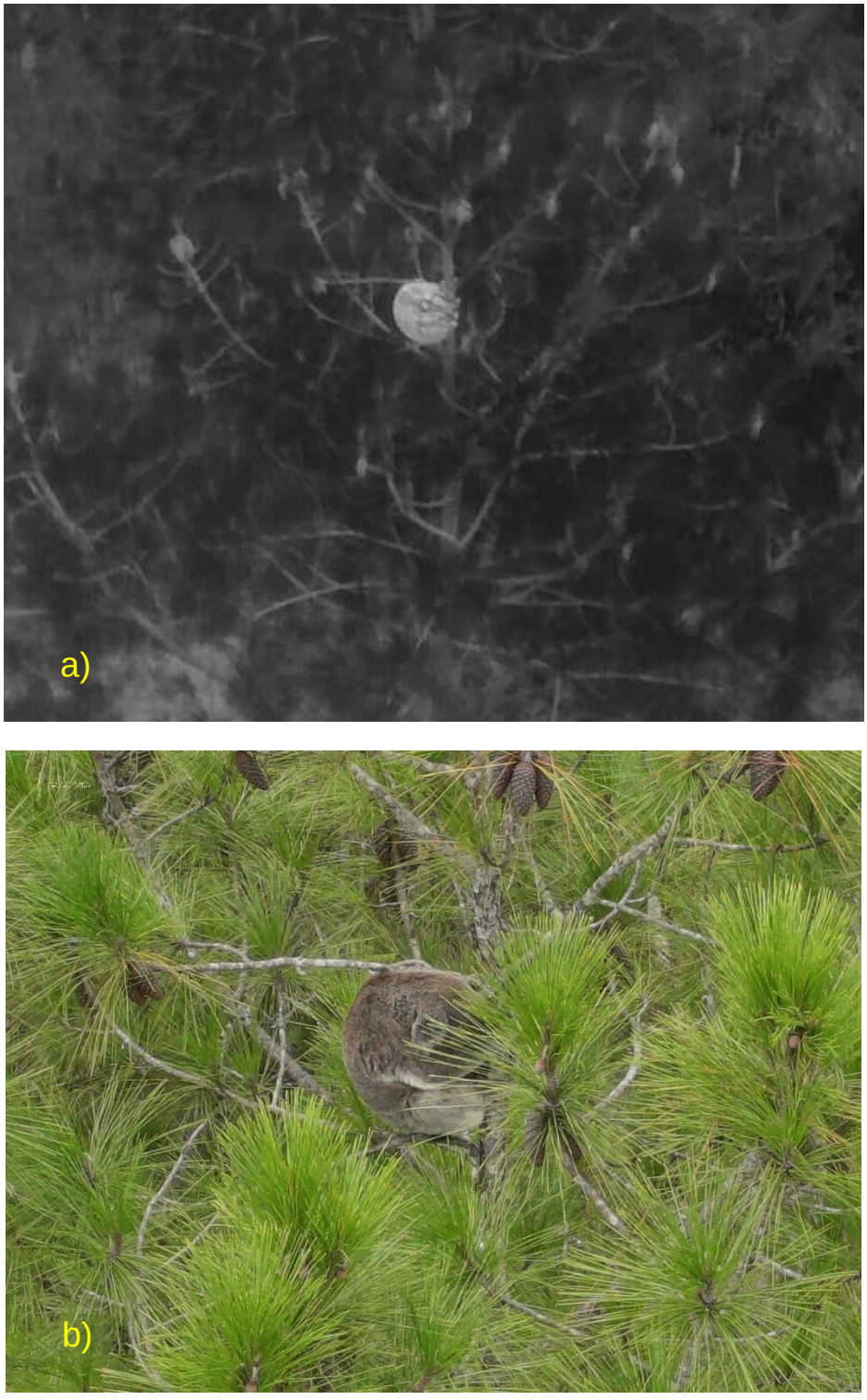

Figure 4. Image of a koala located in the top of a pine tree, after being detected using a drone; a) thermal image showing heat generated by the koala, and b) colour image. (images taken with the drone-mounted camera during the March 2023 fieldtrip).

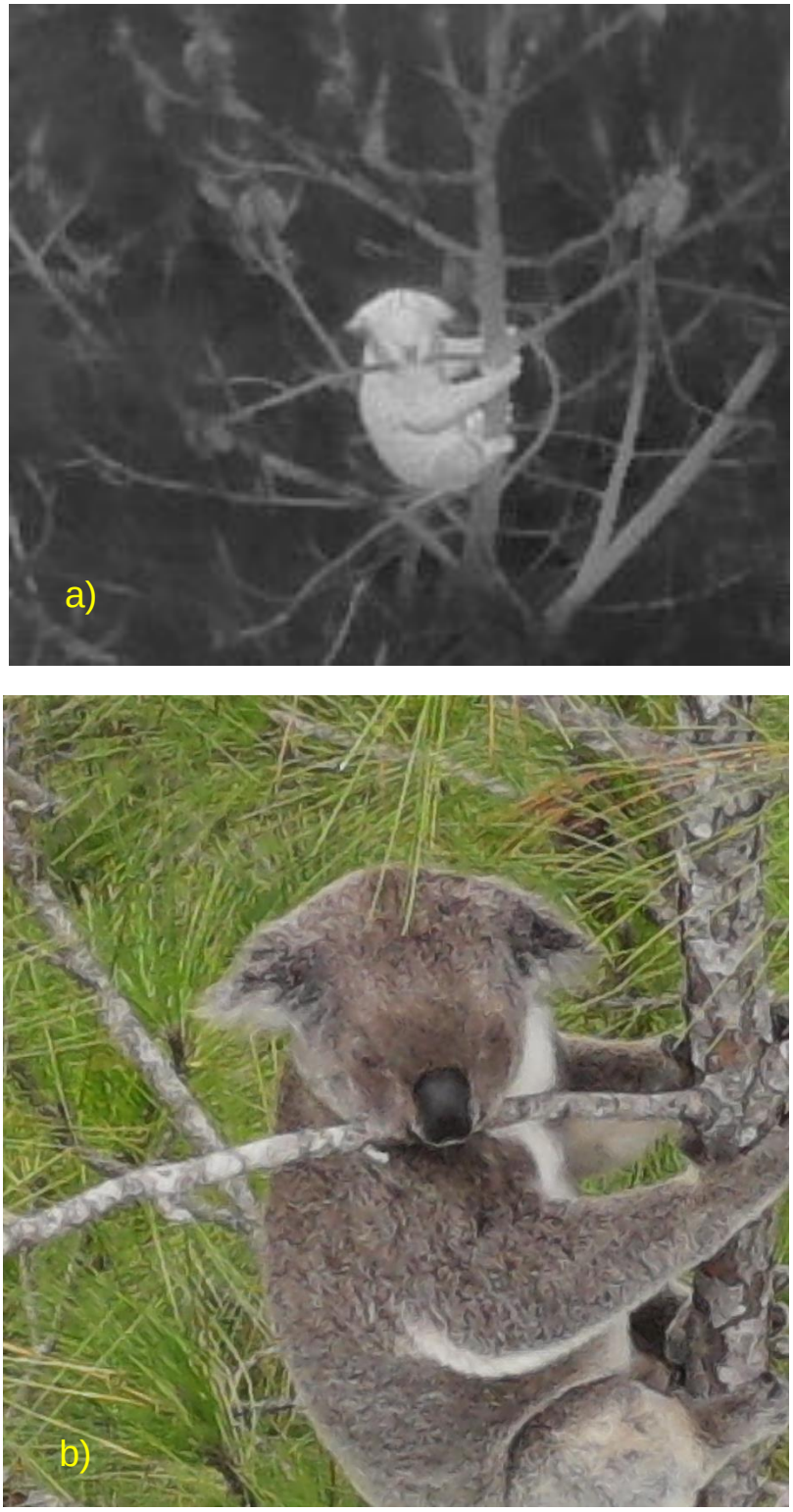

Figure 5. Zoomed-in images of the same koala as in Fig.4, after the koala responded to the noise of the drone and raised its head. This provided a better view of the ears, which appeared not to contain any ear tags, allowing us to record the individual as a cleanskin; a) thermal image, and b) colour image.

Conclusion

The *Koala Capture / Monitoring Event* conducted during March 2023 was the first for the year, under the modified Koala Monitoring Program. The following points summarise what was achieved:

- The number of koalas (12) detected during the March fieldtrip was twice that detected in November 2022 (5 tagged and 1 cleanskin), despite similar search effort and techniques. This total was closer to previous levels (12 in July '22 & 16 in Feb'22) and highlights the variability in detection that is likely due to the cryptic nature of koalas, rather than actual changes in abundance.
- Seven previously tagged and independent koalas were sighted: 1. Ella, 2. Emily, 3. Larabee, 4. Marlee, 5. Zara, 6. Douglas and 7. Nyunga.
- In addition, four cleanskin (untagged) koalas was observed during the trip.
- Three of the 11 koalas were detected using a thermal-imaging drone.
- No koalas were caught during the March 2023 *Capture / Monitoring Event*. However, observation with binoculars suggested that two individuals had stained rumps, which is generally indicative of cystitis (chlamydial infection).
- A large portion of the fieldtrip was spent driving roads around the study site searching for the VHF signals of females Miso and Brumby. However, no signals were detected.
- At the end of the March 2023 fieldtrip, four koalas were fitted with LX tracking collars (see Appendices 1 & 2).

The final *Koala Capture / Monitoring Event* is scheduled for July 2023, at which time we plan to retrieve all LX collars and base stations.

Appendix 1. Summary details for all koalas captured up to March 2023. Koalas fitted with transmitters after the 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 (March 2023)
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 (Feb'22).
13487	Emily	F	1.07	1	metal UQ724	metal UQ789	9/10/2017	-27.8121559	153.1086764	Tracked. Looked fine. Fitted w LX collar.
13488	Cain	M	8.07	2-4	-	metal UQ796 & yellow front / red back	9/10/2017	-27.8132431	153.1039776	Unsighted.
13489	Scarlet	F	4.81	1-3	metal UQ753	Royal Blue G14	10/10/2017	-27.8110978	153.1049627	Unsighted.
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. Looked fine.
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 (March 2023)
13509	Nyunga	F	3.24	1-2	Metal UQ955	White T7	28/05/2019	-27.815716	153.115121	Sighted. Rump looked stained.
13518	Marlee	F	not weighed	<1	Metal UQ118	-	1/08/2019	-27.812705	153.108693	Tracked. Looked fine. Fitted w LX collar.
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 2022.
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	Unsighted. Dispersed off-site mid-2022.
13558	Gladys	F	4.93	2-4	Metal UQ939	Maroon A2	11/11/2020	-27.81102459	153.1056022	Unsighted.
13564	Ella	F	5.23	3-6	Metal UQ934	Orange (no #)	19/04/2021	-27.811320	153.106273	Tracked. Looked fine. Fitted w LX collar.
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	Unsighted.

UQ #	Name	Sex	Mass	Age 1st capture	Left ear tag	Right ear tag	1st Capture	Latitude	Longitude	Notes from latest trip (March 2023)
13332	Miso	F	3.09	1-3	Metal UQ916	Orange (no #)	15/02/2022	-27.81167394	153.1033398	Unsighted since fitted with VHF-only collar (Feb 2022). 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	Sighted. Rump looked stained.
13354	Brumby	F	2.95	1-3	Metal UQ576	Light blue front / red back (no #)	12/07/2022	-27.81174711	153.1042724	Unsighted since fitted with VHF-only collar (July 2022). Unable to detect VHF signal.
13373	Douglas	M	5.8	2-4	Red 7894 (AZWH tag)	-	15/11/2022	-27.816287	153.117667	Released Nov'22 after treatment at AZWH. Tracked. Looked fine. Fitted w LX collar.

Appendix 2. Summary of radio frequency details for all koalas fitted with collars at the end of the March 2023 fieldtrip.

Koala	Collar freq	Turn on time	Collar details
Ella	150.761	7:00am 12hr	LX collar A5-549
Emily	150.581	7:30am 12hr	LX collar A5-639
Douglas	150.5417	7:00am 12hr	LX collar A5-617
Marlee	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