Koala Monitoring Program

Yarrabilba Priority Development Area

Koala Capture / Monitoring Event May 2019

Summary Report

Dr Ben Barth measuring the head of the new male koala “Lucky”

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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 May 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, and 4. 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 27th – 29th May 2019. The study team comprised three personnel from the Koala Ecology Group (Ben Barth, Bill Ellis, and Sean FitzGibbon).

At the time of the fieldtrip four koalas were collared, comprising the males Lindsay, Kevin and Cain and the female Jean. These koalas were located by radio-tracking using the unique VHF radio signal emitted from each collar.

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.

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 recaptured 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

A total of eight independent koalas were sighted during the May 2019 field trip, within the focal area of the Yarrabilba Priority Development Area (Fig. 1). Five of the sighted koalas were already tagged while the other three sighted individuals were ‘cleanskins’ (i.e. not previously caught and tagged).

The cleanskin koalas were found during habitat searches and two were able to be safely captured using the flagging technique. The first was an adult male (named Lucky) and the other was a sub-adult female (named Nyunga). These new koalas were caught, examined, tagged and fitted with a tracking collar (see further details below). The third sighted cleanskin was a healthy-looking female; no attempt was made to catch this koala given the difficulties involved (i.e. it was in an enormous blue gum on a steep, eroded creek bank).

In addition, a tagged male koala (named Heath) was sighted within a large blue gum during a targeted habitat search along Quinzeh Creek. Once sighted, binoculars were used to read the ear tag numbers which enabled us to determine the identity of the koala. Heath had not been seen on the site since he was first captured and tagged on 17th May 2017, almost exactly two years prior. This remarkable finding may have been due to the koala vacating the site during the intervening period. However, given the cryptic nature of koalas, it is also possible that Heath was present on the site the entire 2-year period but that he was not detected during search efforts.

Figure 1. Plot of the initial location of koalas that were sighted during the May 2019 fieldtrip, and the base stations that have been deployed to monitor their movements.

The female koala named Jean was scheduled to be captured during the May fieldtrip. An unsuccessful attempt was made to recapture her using the fence trap method, as she has previously acted very nervously during flagging attempts e.g. jumping haphazardly between branches. For the fence trap method to work successfully, the koala must descend the tree of its own volition (i.e. after we have left the area) and be guided into a metal cage trap by a temporary corflute fence erected around the tree base (Fig.2). Once in the trap, a sensor camera then sends an SMS message to a member of our team so that the koala can be safely and quickly retrieved from the trap and examined as per usual. Unfortunately, Jean evaded capture by moving between trees through the canopy, so that she was able to descend to the ground outside the temporary fence.

Although we did not catch Jean, visual assessment with the aid of binoculars suggested that she had no signs of poor health and that her collar was still fitting well. We will attempt to re-catch Jean at the next opportunity.

Figure 2. Image of Dr Bill Ellis setting up the fence trap to capture the female koala named Jean.

In addition to the koalas described above, the collared male koalas named Lindsay, Cain and Kevin were radio-tracked and sighted during the May fieldtrip. No attempts were made to recapture them. All three koalas appeared fine when visually inspected with binoculars.

In total, three koalas (Lucky, Nyunga, Heath) were captured during the May 2019 *Koala Capture / Monitoring Event*. Further details concerning the health and examination of these three koalas are provided below, along with pictures taken during the fieldtrip. All tag and collar details are provided in Appendix 1.

Lucky (13508)

This new male koala was found in a blue gum while we searched habitat on the northern arm of Quinzeh Creek, in the area where Zara has previously resided. In fact, Lucky was found within 50m of Zara's fallen collar, raising the possibility that her collar was dislodged during a social encounter between the two koalas. Lucky weighed 7.4kg and was in excellent condition (body score 9/10); he did not present any signs of chlamydial infection, having clear eyes (Fig. 3) and an unstained rump (Fig. 4). Swabs were collected under anaesthesia to confirm Lucky's chlamydial status (laboratory results pending). Examination of his tooth wear suggested he is only a young animal of approximately 2-4 years.

Lucky was fitted with a coloured tag in each ear to aid visual identification from the ground. The left ear was fitted with yellow tag C19 and the right ear with red tag A19. The koala was then fitted with a standard LX collar and an ear tag transmitter; the latter will serve as a back-up method of locating Lucky in case his collar falls off.

Lucky was captured on the first day of the May 2019 fieldtrip; tracking over the following two days revealed that he moved less than 150m from the point of capture.

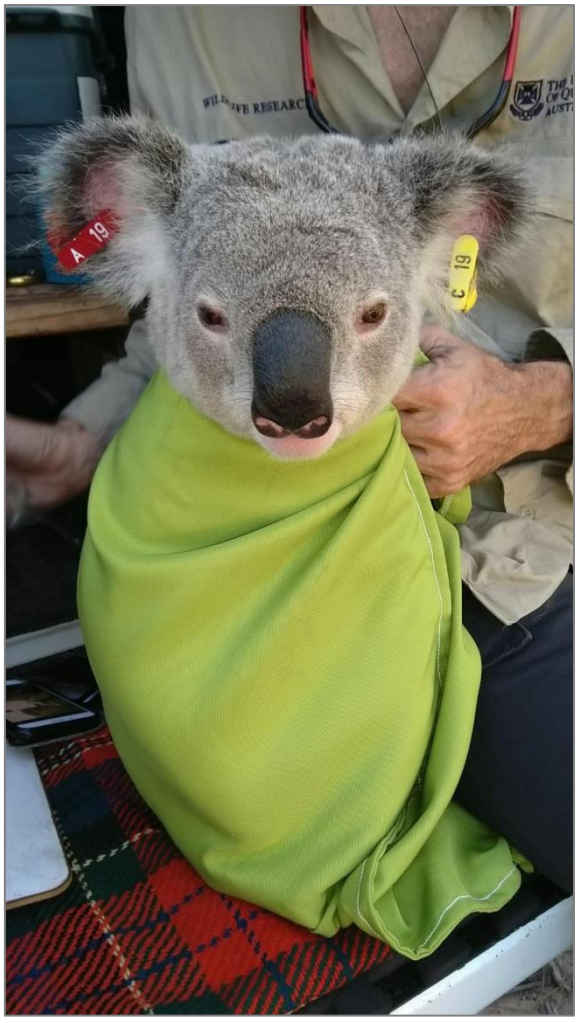

Figure 3. Image of the new male koala "Lucky" showing his clear eyse and coloured ear tags.

Figure 4. Image of Lucky under anaesthesia, showing his white rump.

Nyunga (13509)

A new (cleanskin) koala was found during a targeted habitat search around base station 3, where the collared male named Lindsay had been residing, and where the male Bomber was previously known to frequent. This small female koala was successfully flagged down from an ironbark tree.

Nyunga weighed only 3.2kg and the state of her pouch (clean, unexpanded) strongly suggested that she had not yet bred. She had very little tooth wear and was estimated to be 1-2 years old. Nyunga was in very good condition (body score 8.5/10) and did not present any signs of chlamydial infection. Eye and urogenital swabs were collected to confirm her chlamydial status (laboratory results pending). She was given one coloured tag (white T7) in the right ear and one small metal tag (UQ955) in the left ear.

Figure 5. Image of Nyunga after fitting with white tag in the right ear; her eyes were clear.

Nyunga was not fitted with an LX collar because she weighed less than 4kg (the collar would have exceeded 5% body weight). Instead, she was fitted with a light weight collar (30g) that contained just a VHF radio transmitter, which will permit her to be radio tracked. This is the same type of collar that is currently fitted to the sub-adult male named Kevin. When these koalas grow to at least 4kg their collars can be swapped to the LX model, so that their movements can be monitored via the LX website.

Although Nyunga is currently small and young, it is possible that she may reproduce later this year during the peak koala breeding season (Sept – Dec).

Heath (13007)

This male koala was originally discovered on the site during May 2017. In fact, Heath was the first koala to be captured and tagged as part of the koala research program. At that time he was a sub-adult male weighing 3.65kg and estimated to be 2-3 years old. As previously mentioned, Heath was not observed again until the recent May 2019 fieldtrip, when we was spotted in a large, well-branched blue gum on the southern arm of Quinzeh Creek. This is the same area where Meghan and Lindsay were found and captured. Heath responded well to flagging by the climber, and safely and calmly descended the main trunk where he was captured by the ground crew and restrained in a canvas bag.

Heath was anaesthetised to facilitate a detailed examination and the collection of eye and penial swabs (Fig. 6). The examination revealed that he had almost doubled in size since 2017, with his weight slightly exceeding 7kg. His body condition was scored as 6.5/10 and his coat appeared in good condition.

Heath's left eye was regarded as having minor inflammation of the conjunctiva (Fig. 7). Such inflammation could be due to chlamydial infection, physical trauma or some other condition. Laboratory analysis of the collected swabs will provide a clearer indication of whether chlamydial infection is the underlying cause of the inflammation. If this is found to be the case, it may be prudent to take Heath into care at Australia Zoo Wildlife Hospital for treatment with antibiotics, as occurred with Cain's unilateral eye infection.

Heath was fitted with an LX collar so that his movements can be monitored via the base stations and LX website. In addition, Heath was fitted with an ear tag transmitter (Fig. 8). This light weight VHF transmitter will serve as a back-up method of locating Heath, should his LX collar fall free.

Figure 6. Image showing swab sample collection from Heath's right eye, while he was anaesthetised.

Figure 7. Heath's head picture, showing the minor inflammation of his left eye conjunctiva (orange arrow).

Figure 8. Image showing the ear tag transmitter fitted to Heath's right ear, with the black aerial protruding.

Conclusion

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

- A total of eight independent koalas were sighted within the priority area, including three untagged (cleanskin) individuals.
- Two of these sighted koalas were cleanskins (Lucky and Nyunga); both were able to be captured, tagged and collared; both appeared healthy and free of obvious chlamydial infection.
- The third sighted cleanskin was a healthy-looking female; no attempt was made to catch this koala given the difficulties involved (i.e. it was in an enormous blue gum on a steep, eroded creek bank).
- The male named Heath was sighted and recaptured. This koala was originally discovered on the site during May 2017 but was not observed again until the recent May 2019 fieldtrip. This may have been due to the koala vacating the site during the intervening period, or to it simply being cryptic and going undetected despite repeated habitat searches in the area where it was found. Since his first capture, Heath has doubled in size to just over 7kg. He was in good fair body condition but his left eye had minor inflammation. If the laboratory testing reveals this is due to chlamydial infection then we suggest that Heath be taken to Australia Zoo Wildlife Hospital for treatment with antibiotics, as occurred with Cain.
- The males Cain, Kevin and Lindsay were tracked and sighted within their usual areas of occupation. All appeared healthy and free of clinical signs of disease. The female named Jean was not able to be recaptured; another attempt will be made during the next scheduled fieldtrip.
- The female koala named Meghan was first tagged and collared during the May 2019 fieldtrip. Laboratory test results later revealed that she had a urogenital chlamydial infection, so we had planned to recatch her in May and take her to AZWH for treatment. Unfortunately, Meghan dropped her collar before the May 2019 fieldtrip so we were unable to radio track her. Despite targeted searches of the area she had been residing in, we were unable to sight this sick koala. Further searches for her will be conducted during the next fieldtrip.

Since late 2018, the focal study area has been transformed considerably through the clearing of vegetation within marked development areas. Although most of these areas were dominated by exotic pine trees, they still contained scattered koala food trees. GPS data collected from collared koalas in 2018 revealed that some of the examined individuals regularly traversed these pine-dominated areas. As such, it is possible that the clearing of large areas of this habitat may have impacted some of the resident koalas.

At the end of the May 2019 fieldtrip, seven koalas were fitted with collars (see Appendix 1). This was the second *Koala Capture / Monitoring Event* for 2019 under the renewed contract. The koalas that are currently collared will continue to be routinely radio-tracked under the *Koala Monitoring Events* component of the program until the end of the year.

Dr Ben Barth releasing male koala “Heath” during the May 2019 fieldtrip.

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

UQ #	Name	Sex	Mass	Age	Left ear tag	Right ear tag	1st Capture	Latitude	Longitude	Frequency	Notes from latest trip (May 2019)
13007	Heath	M	3.83	2+	Orange F10	Yellow H10	17/05/2017	-27.8113490	153.1062150	151.524 150.408 ear	Recaptured 27/5/19 and collared; fair condition, minor inflammation left eye
13009	Caitlin	F	5.92	4	Pink 866	Yellow H6	18/05/2017	-27.8219730	153.1313310	not collared	Unsighted since first capture
13008	Bomber	M	9.28	5-10	Light Blue 621	Pink 886	18/05/2017	-27.8121970	153.1072190	not collared	Unsighted since October 2018
13486	Jean	F	5.56	3-6	metal UQ800	Orange F15	9/10/2017	-27.8121559	153.1086764	150.8698	Sighted; not re-captured
13487	Emily	F	1.07	1	metal UQ724	metal UQ789	9/10/2017	-27.8121559	153.1086764	not collared	Unsighted since first capture
13488	Cain	M	8.07	2-4	Royal Blue G8	metal UQ796	9/10/2017	-27.8132431	153.1039776	150.8114	Sighted; not re-captured
13489	Scarlet	F	4.81	1-3	metal UQ753	Royal Blue G14	10/10/2017	-27.8110978	153.1049627	not collared	Sighted 6th and 7th August 2018, with back young
13490	Sue-Bob	F	5.66	5-10	metal UQ799	Orange F20	10/10/2017	-27.8122096	153.1063710	not collared	Recaptured and de-collared; very poor condition
13495	Kobe	F	5.06	3-6	metal UQ175	Yellow C20	20/03/2018	-27.8137242	153.1169157	not collared	Taken to AZWH; euthanised Aug'18

13304	Zara	F	6.17	5-10	Maroon A16	Yellow C4	6/06/2018	-27.8097031	153.1034546	not collared	Recaptured and collared; good condition
13497	Lindsay	M	5.8	2-4	Yellow C10	metal UQ958	10/10/2018	-27.8170122	153.1096012	151.6380	Sighted; not re-captured
12341	Kevin	M	2.15	1-2	Light Blue B5	Metal UQ991	4/03/2019	-27.811086	153.104432	151.2820	Sighted; not re-captured
12342	Meghan	F	5.02	3-6	Metal UQ965	Light Blue B3	5/03/2019	-27.818168	153.108581	not collared	Unsighted since first capture
13508	Lucky	M	7.4	2-4	Yellow C19	Red A19	27/05/2019	-27.809771	153.103803	151.403 150.550 ear	First capture; excellent condition.
13509	Nyunga	F	3.24	1-2	Metal UQ955	White T7	28/05/2019	-27.815716	153.115121	151.4830	First capture; excellent condition.