

Koala Safe Neighbourhoods

Koala monitoring, genetics research and community

engagement project

Year 2 (2020)



Interim Progress Report 1st July 2020 to 21st December 2020

Prepared for the Redland City Council by the University of the Sunshine Coast, Detection Dogs for Conservation.

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Project overview

The Koala Safe Neighbourhoods (KSN) program is a Redland City Council (RCC) koala conservation initiative that was launched in March 2019. This program delivered a pilot koala safe neighbourhood in the suburb of Ormiston that includes a koala tracking and monitoring project. The key objective for 2020 was to expand the current KSN program to include additional koala safe neighbourhoods in the areas of Birkdale and Thornlands and selected properties at Mount Cotton. In 2018, RCC also engaged Detection Dogs for Conservation (DDC) to deliver a Redlands Coast-wide genetic survey (see Redland Coast Koala Population and Genetic Assessment Report on Council's website), as an extension to that work the DDC surveyed the new KSNs as a first step to understanding koala populations within those areas, and have followed that work on during 20/21 with a repeat of the 2018 city-wide genetic surveys (mainland only). No koala genetic surveys were conducted on North Stradbroke Island (Minjerribah) in 2020/21.

The key goals of this project are:

- 1. Koala genetic sampling survey with analysis
 - 1.1 Collection of koala scats/tissue for DNA sampling for the koala population within the KSN catchments and across the Redlands Coast, excluding Minjerribah;
 - 1.2 Quantify koala relatedness, health and disease incidence via genetic analyses;
 - 1.3 Identification of individual koalas;
 - 1.4 Identification of local threats /pressure points (i.e. genetic barriers);
- 2. Delivery of KSN koala population monitoring
 - 2.1 Estimation of minimum number of individuals in specific KSNs;
 - 2.2 Continue provision of a koala monitoring project that can be transitioned into an ongoing citizen science program;
 - 2.3 Capture and monitoring of ambassador koalas for KSNs;
 - 2.4 Continue to test technology such as Bluetooth and altimeters on koalas for conservation benefit;
 - 2.5 Regular visual tracking of KSN collared koalas;
 - 2.6 Record and report disease incidence for KSNs;
 - 2.7 Identification of core areas of habitat utilisation of KSN collared koalas;



- 2.8 Provide regular community updates, including photos, to RCC on koalas being monitored within KSNs for promotion via RCC media channels;
- 3. Facilitation of the KSN citizen science and community engagement activities
 - 3.1 Coordinate and lead a select group of citizen scientists to assist with KCSN koala monitoring activities in alignment with RCC's broader community engagement objectives;
 - 3.2 Interact with the community, as required, and communicate a positive conservation message about koalas;
 - 3.3 Participate in community events such as forums, workshops or training sessions, as required



Project timeline

	Year 3		
Project commencement	July 2020		
Dog surveys / Genetic			
Site discussion / letter sent (RCC)	August 2020		
Survey design	August-September 2020		
DDC dog surveys	November 2020 – March		
(Note that dog surveys for genetics are weather dependant)	2021		
Genetic laboratory work	From January 2021		
Genetic analyses	From April 2021		
Ambassador koalas in KSCN			
Koala recruitment through AZWH releases	From July 2020		
Koala catching / collaring/ monitoring	From August 2020 (COVID dependant)		
Community engagement			
Workshop, communication with community, providing social media content	From July 2020		



Draft Interim progress report Note that the interim report will be focused on work achieved (e.g. koalas caught, number of vet exams, number of tracking events, number of surveys, samples collected etc.) but will not provide data analyses.	December 2020
Draft Final report The draft report will contain all the survey results and how much of the genetic analyses as can be generated in the short timeframe. All analyses will be included in the final report.	15 May 2021
Final report (after comments on draft report have been addressed)	30 June 2021

Progress summary

Koala genetic sampling survey

Survey sites were defined in collaboration with the Redland City Council. A total of 250 potential locations (Figure 1) were established as reference points for commencement of surveys. Note that variation from the original design is expected due to access permissions and field team on-site evaluations of ecological and landscape features prior to the deployment of detection dogs.

The design was predominantly based on the previous genetic study conducted in 2018 by DDC in Redlands mainland, so as to include some site replication. Additionally, new locations were incorporated to increase the coverage of the surveys and to ensure a satisfactory coverage of ecological, geographical and social aspects of the Council area. For example, ecological corridors, regions where koalas are less frequently sighted, the area of the future Heinemann Road Sporting Complex, survey sites used by the Biolink Ecological Consultants in 2018, permanent State monitoring sites, urban zones and roads were added to the final design.





Figure 1. Genetic survey sites design.



Since July 2020, the field team has been collecting scats during koala captures and welfare checks. Drone surveys have also enabled the detection of 58 koalas across Birkdale, Mt Cotton and Thornlands, and collection of 17 samples of fresh scats. We also performed dog surveys in each of the proposed KSN to determine the minimum number of individuals and sex ratio (data in previous report -'*Ormiston Koala Population Monitoring and Community Engagement & Genetic Koala Survey for Additional Koala Safe Neighbourhood Candidate Areas 2019-2020 Progress Report (Year 2).*'

In November 2020, two fresh koala scat detection dogs, Billie-Jean and Bear, were deployed for a total of 5 days/dog in Mt. Cotton. This resulted in the collection of 35 fresh scat samples for genetic analyses (Figure 2) and three incidental koala sightings – one healthy female, one sick male (Redland Wildlife Rescue was notified), and a young individual was found dead with signs of predation by birds.





Figure 2. Location of fresh scat samples collected by detection dog surveys.

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Delivery of KCSN koala population monitoring

Since July 2020, nine koalas were recruited to be part of the ambassador koala program – Bark and Slinky in Ormiston, Uka and Rainbow in Birkdale, Bob in Mt. Cotton (at the time of writing, was in treatment at the Australia Zoo Wildlife Hospital (AZWH)). Blake, Summer (euthanised after



4 months of monitoring), Benson and Lackey in Thornlands/Cleveland. These were in addition to Kimo, Silkie, Bruce, and Banjo (all in Ormiston/Wellington Pt.), who have been part of this project since 2019. A total of 10 koalas are currently still actively monitored in the field. Uka, Bob and Summer were taken to Australia Zoo Wildlife Hospital (AZWH) for treatment (see "Koala veterinary exams" section). Bark is Tally's joey and was found on the ground, sent to the AZWH and released back at Stevens Place, Ormiston on the 16th June by DDC team. Tally, who also resides in Ormiston, was monitored until April 2020 when she dropped her collar. Slinky was found as an orphaned joey on the road at Myora Springs, North Stradbroke Island, in October 2019 and was transferred to the AZWH. After one week in care he showed signs of pneumonia and a recheck of his X-Ray detected a small focal point in one lung showing the likely start of the disease. He was treated and in September 2020 the relocation on the mainland was granted by the relevant State authority. Slinky was released near Rose St., Ormiston

Catching effort

A total of 15 days between August and December 2020 were allocated to locate and capture an additional 6 koalas for the KSN ambassador koala program as shown below:

- 24 & 25th August, all KSN: four drone detections, five additional koalas assessed as not catchable, caught Uka and joey Liptus, Rainbow and joey Tilly.
- 1st, 2nd, 3rd September, all KSN: nine drone detections in Thornlands, five found through dog surveys (Birkdale / Thornlands), caught sick male and female & joey (AZWH for treatment) and an additional female (AZWH euthanasia), plus joey Hazel (in care). Also recaptured Kimo and joey Nibbles, and Silkie from Ormiston.
- 9th, 10th September, Thornlands: assessed Mabel (not catchable), set a koala trap for Bark.
- 13th September, Thornlands: assessed Mabel (not catchable), located two koalas on Clifford Perske Dr and Jeff St (spotted), caught female (euthanised) & joey Sir Derek (in care) on Ribonwood St Park, Thornlands.
- 16^{th} , 17^{th} & 18th September:
 - Thornlands: male in Alexandra Hill car park (unsafe for capture), female "Summer" caught Clifford Perske Dr (joey in the tree, reunited same day),
 - Mt Cotton: eight koalas drone detected, none safe for capture, Bark caught,
- 28 & 29 November, Mt Cotton: four koalas drone detected, none safe for capture,



09 & 10 December, Mt. Cotton and Thornlands: six koalas were detected by detection dogs and visual spotting. Four were safe for capture. Three capture attempts were successful. A male, Bob, and a female, Summer, with signs of chlamydia were taken to AZWH for treatment. A male named Lackey was captured, recollared and released on the same day.

To ensure success in detecting koalas for capture, the DCC research team deployed a large range of resources in the field in the days prior to the scheduled capture day, including more than 15 people (e.g. professional catchers, USC volunteers and researchers). Capture efforts were made possible via a combination of systematic thermal drone surveys (Figure 3), visual searches, detection dog surveys and reported community sightings. Captures were performed by flagging and trapping. Capture attempts were aborted as soon as the koala moved into an unsafe position. As a result of these safety precautions, no incidents occurred during the capture of koalas and all animals and field personnel remained injury-free.

A total of 58 individuals (excluding joeys) were sighted and 14 were captured (Figure 4). We are however achieving a lower success rate in catching and recruiting than we were in Ormiston in the previous years. In 2020, we found koalas more often in unsafe positions for capture and were often of poor health, with approximately 30% euthanised. Further consideration might be needed in terms of achieving the number of ambassadors within budget.





Figure 3. Thermal drone surveys and koalas detected.





Figure 4. Location of captured koalas.



Koala veterinary exams

Of the 14 koalas captured, five with overt signs of illness were immediately transferred to Australia Zoo Wildlife Hospital (AZWH) for assessment. Of these, Cariad was diagnosed with bilateral reproductive disease, bursal cysts and poor body condition and was humanely euthanised. Banjora was also euthanised due to unilateral reproductive disease. Summer showed signs of chlamydial disease, was re-captured and euthanised due to bilateral reproductive disease and bursal cysts. Lackey had chlamydial cystitis and thick wall bladder. He was treated and released in Thornlands. Bob has cystitis and at the time of writing is in treatment. Uka and her joey, Lyptus, are in treatment for chlamydial conjunctivitis. Daisy, a three year-old female, had leukemia and, considering her prognosis, the Endeavour Veterinary Ecology (EVE) clinic euthanised her on welfare grounds. Her joey, Sir Derek, was taken to foster care.

Recently, it was noted that the joey of female Rainbow was absent. A joey was picked up on the ground by members of the public within the same home range area of Rainbow. The joey was taken in care, but later euthanised at AZWH.

The remaining captured koalas received a full veterinary health examination under general anaesthesia by EVE staff (Appendix 1) and were all fitted with Bluetooth ear tag, telemetry/GPS collars, altimeters, and released back into the wild on the same day as capture. Welfare checks have been conducted regularly, at least once or twice a month, logging a total of 161 sightings of monitored koalas.

Radio-tracking koalas and estimating their home ranges

Koala locations (Figure 5) were used to estimate home ranges (Figures 6 - 15) of each collared koala, using all tracking events to date (table 1). Home ranges were calculated as 95% of the fixed Kernel distribution to remove any potential outlier relocations. All home ranges and their sizes were calculated using adehabitatHR package in R. Only one location fix per day was used for home range calculations to avoid variable fix interval bias. Nonetheless, all location fixes are illustrated in the Figures below.

An interesting observation was made of a dispersal event by Bark. He is a 15 month-old male koala that was released to Stevens Place, Ormiston in July 2020 after being in care. Bark remained in Steven's Place within a short-range of his release point for almost one month until Banjo, a 6 year-old male, challenged him. They were observed in the same tree twice and residents



living in the area reported hearing aggressive interactions at night-time. On the night of the 16th August 2020, Bark moved to an area near Rose Street, around 900 m away from Stevens Place, where he stayed for nearly one month and was sighted in house yards with medium size dogs ranging freely. On the 13th September, he dispersed further to Gloucester Street, and then on to Bibury Street Park where he currently resides, 1.7 km away from his original release location. On the 26th October, Bark was sighted in the same tree of a female koala, potentially looking for a mate during the breeding season. These series of events showcase some of the important issues for koala conservation in urban areas, as well as exemplifying natural koala behaviour: the dominance of males (Ellis et al., 2002a); dispersion of young koalas (Dique et al., 2003; Ramsay, 2017); importance of habitat connectivity allowing dispersal and therefore protecting gene flow (Fowler et al., 2000; Lee et al., 2010); temporal variance of home-ranges (Rus, 2020); threats that urban areas pose to koala survival (Dexter et al., 2017; Whisson et al., 2020); and the importance of citizen engagement so that threats can be mitigated.

Name*	Sex	Duration (days)	Home-range (ha)
Banjo	Male	556	29
Bark	Male	136	95
Blake	Male	45	26
Bruce	Male	544	24
Kimo	Female	558	6
Rainbow	Female	66	15
Silkie	Female	390	8
Slinky	Male	15	1
Summer	Female	40	8
Uka	Female	45	4

Table 1. Summary of relocations and home range size for all radio-tracked koalas to date.

* Note tha Lackey and Benson were recently released (November and December 2020), therefore the current number of relocations do not allow reliable home-range estimation. Home ranges based on less than 1 years of data may be unrepresentative for that individual.





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Figure 5. Daily location of each monitored koala since July 2020.





Figure 6. Home-range of the monitored koala named "Banjo". Suburb: Ormiston.





Figure 7. Home-range of the monitored koala named "Bark". Suburb: Ormiston.





Figure 8. Home-range of the monitored koala named "Blake". Suburb: Thornlands.





Figure 9. Home-range of the monitored koala named "Bruce". Suburb: Ormiston.





Figure 10. Home-range of the monitored koala named "Kimo". Suburb: Ormiston.





Figure 11. Home-range of the monitored koala named "Rainbow". Suburb: Birkdale.





Figure 12. Home-range of the monitored koala named "Silkie". Suburb: Ormiston.





Figure 13. Home-range of the monitored koala named "Slinky". Suburb: Ormiston.





Figure 14. Home-range of the monitored koala named "Summer". Suburb: Thornlands.





Figure 15. Home-range of the monitored koala named "Uka". Suburb: Birkdale.



Community consultation and engagement

Community engagement was severely impacted by regulations and restrictions, including gatherings and social distancing, linked to COVID-19. The current situation still does not encourage social interactions, so community engagement activities have been suspended.

However, whenever safe and possible, the DDC team still actively engaged in conversations about koala conservation with members of the public (examples provided in table 2). Brochures of the Redland Wildlife Ambulance were shared, and three workshops were attended (one physically). Project information, images and videos were shared with Redland City Council to be posted in social media (Figure 16).



Figure 16. Social media post including information provided by the Detection Dogs for *Conservation team (https:// www.facebook.com/IndigiScapes on the 12th November of 2020).*



Bluetooth koala ear tag details were shared with trusted members of the public (five local koala enthusiasts in Ormiston). These are strong supporters of the koala conservation who observe koalas regularly in their backyards or during walks and report their sightings.

Table 2. In-person public interaction in all Koala Safe Neighbourhoods during koala welfare

checks and catching surveys on the second semester of 2020.		
Date	Product delivered	Subject
8/07/2020		Radio-tracking
8/07/2020		Radio-tracking
8/07/2020		Radio-tracking
21/07/2020	Wildlife Rescue Brochures	Radio-tracking
21/07/2020		Radio-tracking
21/07/2020		Looking for koalas
21/07/2020		Catching
04/08/2020		Update about Banjo catching
07/08/2020		Talking about Banjo
10/08/2020		Talking about Banjo
10/08/2020	Wildlife Rescue Brochures	Talking about koalas and helping them to spot Bark and Banjo
10/08/2020		Radio-tracking
25/08/2020		Talking about koala and concerns about developing a bike path at Sunnybay St. green area
25/08/2020		Talking about koala and concerns about developing a bike path at Sunnybay St. green area
28/08/2020		Caio helped a couple of residents to spot Bruce.
28/08/2020		Citizen asking about koalas at Dunda West St.
03/09/2020	Wildlife Rescue Brochures	Caio and Romane helped a resident to spot Kimo. After they talked about koala conservation
06/09/2020		(Resident name and phone) - resident who would love to help in any way during the koala surveys. Sunnybay Drive,

Birkdale.

mum and bub

and bub

At Hilliard St., helping a couple of residents to spot Bark

At Hilliard St., helping a mother and her child to spot Bark

At Crossley Park, helping a mother and her child to spot a

At Crossley Park, helping a couple of residents to spot a mum

11/09/2020 Wildlife Rescue Brochures

11/09/2020

11/09/2020

11/09/2020

checks and catching surveys on the second semester of 2020.

11/09/2020	Wildlife Rescue Brochures	At Crossley Park, helping a couple of residents to spot a mum and bub
11/09/2020		At Crossley Park, helping a resident to spot a mum and bub
11/09/2020	Wildlife Rescue Brochures	At Henry Ziegenfusz Park, a resident joined for Blake's release
17/09/2020		Conversation about Bark, feedback of Biocollect and KSN Project
17/09/2020	Wildlife Rescue Brochures	At Montgomery Park, helping a group of students to spot Silkie and Ruff, and talking about koala conservation
17/09/2020		At Montgomey Park, conversation about koalas and tracking
17/09/2020	Wildlife Rescue Brochures	At Montgomey Park, conversation about koalas and tracking
18/09/2020		The local residentes joined Bark's release
24/09/2020	Participation in a public event	Wildlife Week event attended
24/09/2020	Participation in a council meeting	RCC council meeting attended
27/10/2020		Radio-tracking

- END OF REPORT -