



Conserving Koala Country

2011 FIELD REPORT

Background Information

Lead PI: Dr Desley Whisson

Project scientists: Dr. Desley Whisson and Alistair Melzer

Report completed by: Dr Desley Whisson

Period Covered by this report: April - October 2011

Date report completed: 5th January 2012

Research site: Otway National Park

Protected area status: National Park



This has been an amazing first year of the 'Conserving Koala Country' project. I hope you realise how much I appreciate your being part of this project? Volunteers with your enthusiasm and passion are hard to come by. I enjoyed sharing the fun (and challenges) of field work with you, and hope that the experience was just as rewarding for you. Below is a brief summary of what we accomplished during the trips this year.

I've started a blog at <http://otwaykoalas.blogspot.com/> to keep you updated throughout the year. Please also feel free to email me if you have any questions. In April we caught 10 koalas (*Phascolarctos cinereus*) (5 male, 5 female) at the Bimbi site and fitted them with radiocollars. In addition to tracking these koalas each day, we also completed 49 tree assessments which is pretty amazing with the 4 participants we had on this trip. Koala counts were also completed at Bimbi and in the Parker Hill blue gums. I'm sure the day in the leech-infested blue gums still haunts many! In September we started work at Aire River and caught and radiocollared 4 koalas. We had to do some catching at Bimbi too: a few koalas had managed to lose their collars (due to weak-link breaks). We also did koala surveys in five sites and continued with habitat and tree assessments. A highlight was discovering a new manna gum (*Eucalyptus viminalis*) site and a 3-legged koala (alive and apparently doing well). A good wet day activity was listening to recordings from the Songmeter that I'd placed in the site in August. This device is set to record sound for 5 minutes every hour. An increase in frequency of bellows will tell us when breeding is starting. In October we added another 2 males and 1 female to our radiocollared group at Aire River and recaptured most of our koalas at Bimbi. We also added GPS loggers and accelerometers to all the collars. The accelerometers record movement each second for a week so will give us an idea of when koalas time their activity, and how active they are. To understand the data, we needed to record behaviours (resting vs active) for blocks of time. These observation periods were enjoyable and surprisingly often quite action-packed. Breeding season was in full swing and I think most of us observed at least one interaction between koalas. Again, habitat and tree assessments featured in this trip and some of us found ourselves crawling on hands and knees to get out of the Lighthouse site. I wonder if I

will ever work out a good way to get out of there?! Much of the data we have collected is important baseline data on which we will continue to build to give us an idea of how the koala-habitat system works. Our surveys indicate that Manna Gum supports up to 15 koalas per hectare which to my knowledge is the highest density ever recorded. Tree condition is obviously suffering in some locations so it will be interesting to see what our koalas do when resources decline even further. The radiotracking and GPS loggers are also providing some interesting results. It appears that our boys occasionally wander large distances into unsuitable habitat before returning to their core area. We'll have the tracking data analysed fully by March 2012 so 'stay tuned' for that.

Again, a BIG THANK YOU for your help in gathering this data. If you're ever in the area and in need of a koala 'fix', please give me a call. I'm at Cape Otway a lot in-between Earthwatch trips and would be happy to have you join me.

Best wishes,

A handwritten signature in black ink, appearing to read "D. M. Harrison". The signature is written in a cursive, flowing style.

Desley

SECTION ONE: Scientific research achievements

Top highlight from the past season

Manna Gum habitats at Cape Otway support up to 15 koalas per hectare which is possibly the highest densities of koalas ever recorded. Koalas in these high-density populations have relatively small home ranges comprising only a few trees each. They occasionally make long distance excursions of several kilometres into unsuitable habitat before finding their way back to their core use area.

Reporting against research objectives

Objective 1: Koala population characteristics. Seven long-term monitoring sites were established in predominant habitat types: Manna Gum - 3 sites (Bimbi, Bimbi West, Lighthouse); Blue Gum - 1 site (Parker Hill BG); Stringybark - 2 sites (Parker Hill Mix and Parker Hill SB); Mountain grey gum/stringybark - 1 site (Aire River); Koala surveys were undertaken in all sites (Table 1).

Table 1: Characteristics of koala populations in each site.

Site	Koala density (Koalas.ha ⁻¹)	Number of Koalas	%Female	%Females with young
Bimbi	12.4	81	53.1	58.5
Bimbi West	14.7	52	48.7	50.0
Lighthouse	1.4	8	25.0	-
Parker Hill SB	0	0	-	-
Parker Hill BG	2.0	40	-	-
Parker Hill Mix	1.9	4	-	-
Aire River	3.7	12	57.1	-

Densities are extremely high in Manna Gum (*E. viminalis*) sites with up to 15 koalas recorded in this habitat. Relatively low densities in the Lighthouse site are due to the low frequency of trees in the site.

Objective 2: Habitat characteristics. Habitat assessments were completed at 5 sites (Table 2).

Table 2: Site characteristics

Site	Tree species	% Composition	Tree density (stems.ha ⁻¹)	Mean DBH (cm)	Median Canopy Condition Index	%Trees condition<3
Bimbi	<i>E. viminalis</i>	100	96	49	3	33
Bimbi West	<i>E. viminalis</i>	100	90	46	2	63
Lighthouse	<i>E. viminalis</i>	100	7	40	2	55
Parker Hill SB	<i>E. obliqua</i>	100			Not assessed	
Parker Hill BG	<i>E. globulus</i>	100			Not assessed	
Parker Hill Mix	<i>E. obliqua</i>	95.8	153	70	4	9
	<i>E. viminalis</i> ¹	4.2		-	-	-
Aire River	<i>E. cypellocarpa</i>	30.8	163	48	3	42
	<i>E. obliqua</i>	69.2			3	30

¹Insufficient sample size for analysis of condition.

Condition of manna gum varied between sites with trees in “Bimbi” being in the best condition. “Bimbi West” had a high percentage of trees in extremely poor condition. This site also supported the highest density koala population.

Objective 3: Koala movements and habitat use. Ten koalas (5 males, 5 females) were caught in the Bimbi site in April 2011. Koalas were fitted with radiocollars and located daily throughout the following week, and twice per month until September. Seven koalas (3 males, 4 females) were caught in the Aire River site in September/October and also fitted with radiocollars. When koalas are located, the tree species is recorded and the tree flagged for later measurement. Assessments have been undertaken for 152 trees at the Bimbi site, and 25 trees at the Aire site. These assessments are ongoing while tracking is still occurring. Data will be analysed in March 2012 for a comparison of tree use by koalas during the non-breeding and breeding period. GPS loggers were attached to all collars (including those animals at Bimbi) in September/October. Four loggers that were fitted in September to 2 females and 2 males) were downloaded in October and provided encouraging results. Both males show a movement pattern of spending most time in a small core area, with occasional long trips into unsuitable habitat (see example in Figure 1).

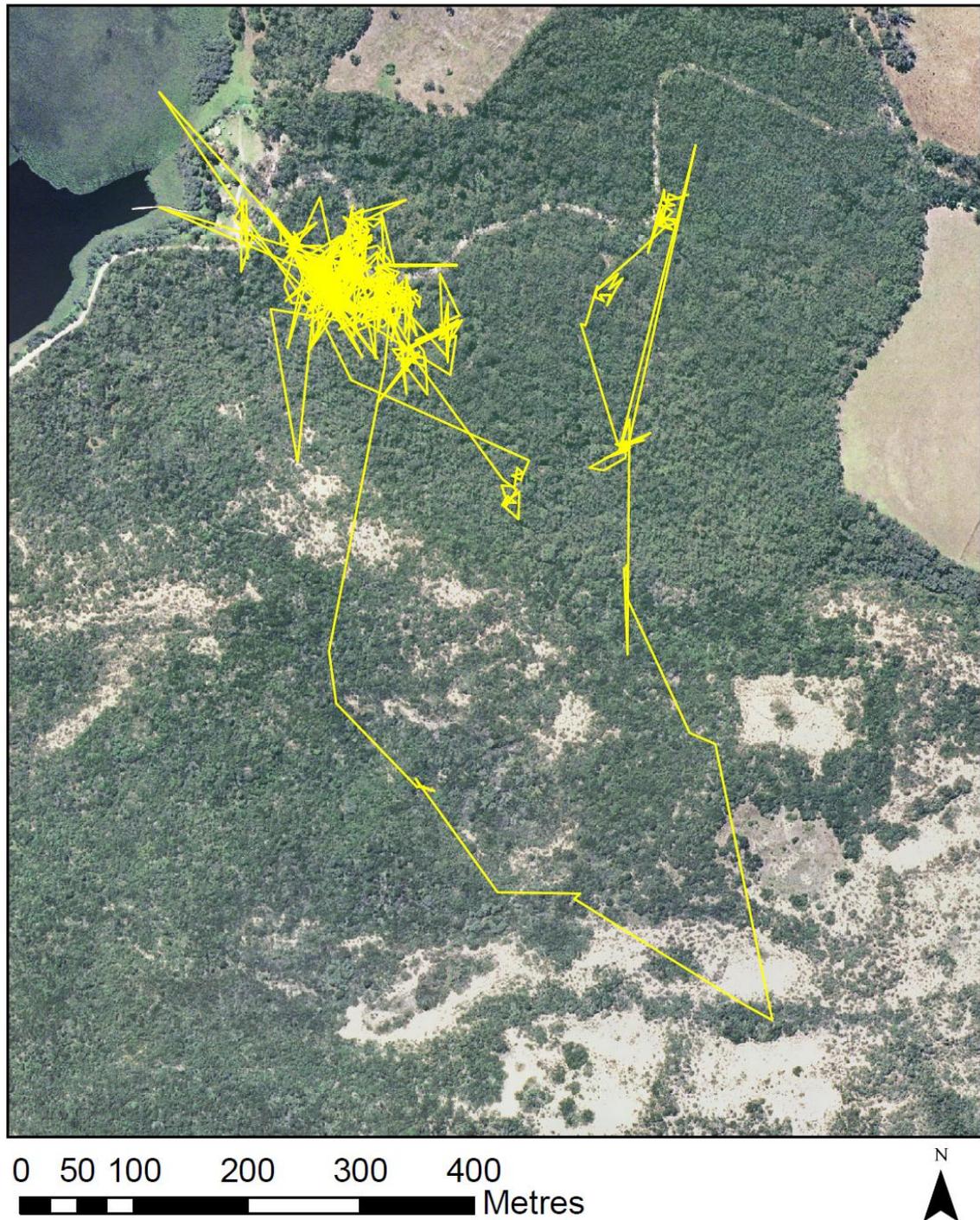


Figure 1: GPS tracks of male koala at Aire River (September to October 2011).

Tri-axial accelerometer dataloggers were deployed on 15 koalas in October. These devices provide continuous movement data that can be analysed to determine activity bouts by koalas and Overall Dynamic Body Acceleration (ODBA). Koalas were observed multiple times for between 15 minutes and one hour per time to record behaviour to match data being recorded by the accelerometer. Methods of data analysis (e.g., spectral analysis) are being investigated.

Objective 4: Flow-on impacts of canopy defoliation. Spotlight surveys at most sites were undertaken in September. Brush-tailed possums (*Trichosurus* spp.) were spotted at Parker Hill mix but not at other sites. A bird list has been started and will be updated during each trip.

SECTION TWO: Impacts

Contributions to conventions, agendas, policies, management plans

- **National or regional**

We have provided results of koala and tree condition surveys to Parks Victoria and the Department of Sustainability and Environment.

Developing Environmental Leaders

Deakin University students have directly benefited from this project. Results have been presented in lectures to students of the Environmental Science degree. In addition, the project was 'show-cased' as part of a one-week Deakin student field trip to the research site. Students were briefed on the project and also contributed to the research. In addition, in 3 trips during 2011, there have been 7 international (UK, USA and Canada) and 9 Australian participants from a diversity of backgrounds. Several participants have given presentations at their workplace, or in a volunteer situation (e.g., docent at a zoo) about the project.

Local community activities

We are in close contact with local landholders at Cape Otway. In particular, we provide information to the owners of Bimbi Park (major tourist accommodation providers at Cape Otway), and the local horse-riding tour operators and seek their feedback on the project. These relationships are critical as these landholders have significant contact with tourists, school groups, and other visitors to the area. They have referred to us a number of tour operators seeking information about koalas. We have also provided information to a local National Park guide and school groups.

Dissemination of research results

Grey literature and other dissemination

Blog: <http://otwaykoalas.blogspot.com/>

Presentations:

- Koala Research Network, 30/9/11
- Field Naturalists Club of Victoria 4/10/11