

Appendix 8

FAUNA MONITORING REPORTS

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Tarrawonga Fauna Monitoring Early Spring 2009

1.0 Introduction

Eleven plots were monitored between the 6th & 8th October 2009. All nine plots are numbered as in previous reports and two additional rehabilitation plots as Plot 10 (south) and Plot 11 (north) on the western fringe of the rehabilitated area. (See previous report for comment on plot number reassignment regarding Plot 9.)

In addition the plot-based sampling and the general site sampling described in Section 2.0, the rocky outcrop east of Plot 9 and the creek line south of Plot 8 were also targeted for sampling during this survey. The species recorded are indicated with those occurring elsewhere in this mining lease.

It should be noted that these monitoring plots have been set up primarily for flora sampling and have not been standardized to a regular size. The fauna sampling plots based on the locations of these plots have been extended to a standardized 100mx100m plots.

There was an early warm spell with unseasonal daytime temperatures soaring up to over 30°C and nighttime temperatures remaining above 20 °C for a couple of days about 10 days before this survey was conducted. It was followed by significant rain the previous week. The samples for this survey were conducted in clear and calm conditions with temperatures slightly above the seasonal average with daytime maximum of 24 and 26°C and night time minimum of between 16 and 18°C.

2.0 Methods

The sampling procedures used for each fauna group, as in previous surveys, were as follows.

2.1 Birds and Mammals

Each plot was traversed on foot along its length ten times at approximately 10 m intervals. Signs of mammal and bird occupation and use were noted.

Species that occurred within sight and hearing distance of the plots were also noted.

Spotlight transects were conducted along access tracks on the mining lease for the nocturnal species and bats were sampled using ultrasonic bat recording equipments.

Bat call recorders were placed in the various habitats but due to the mobility of these species and close proximity of various plots, not all plots were sampled independently for these wholly aerial based samples.

Callback broadcasts were conducted near Plot 3 and Plot 5. No further attempt was made to cover the rehabilitated area with this procedure at this stage due to the early progress of the rehabilitation.

2.2 Reptiles (and Amphibians)

Signs of reptiles and amphibians on each plot were determined in the manner as described for birds. On each transect the ground and vegetation was closely examined, any timber or other debris on the ground was lifted (where possible) and standing dead timber checked to locate any reptiles or frogs.

In addition to the nocturnal census, the various dams and other suitable habitat on the mining lease were visited during daylight hours to record the species present. All the accessible dams and pools in the Tarrawonga Coal Mine were inspected for the presence of frogs and tadpoles as well as signs of their breeding activities (especially the presence of egg masses). They were also recorded from opportunistic encounters on the road and tracks as well as when sampling in the various monitoring plots.

3.0 Results

The following is a summary of the results of the nine monitoring samples. Species present on the various plots are indicated with a dash (" - ").

3.1 Birds

The bird species recorded during this monitoring sample are marked against the list submitted in the Tarrawonga Mine Proposal report.

Status: All the native birds are protected with the listed vulnerable species marked with "V"; the only exotic species is marked with "#".

Common Name	Scientific Name	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11	L
						-							-
1. Australian Wood Duck	<i>Chenonetta jubata</i>												
2. Pacific Black Duck	<i>Anas superciliosus</i>												
3. Grey Teal	<i>Anas graceless</i>												
4. Australasian Grebe	<i>Tachybaptus novaehollandiae</i>												
5. Pacific (White-necked) Heron	<i>Ardea pacifica</i>												
6. White-faced Heron^	<i>Ardea novaehollandiae</i>												
7. Yellow-billed Spoonbill	<i>Platalea flavipes</i>												
8. Great Cormorant^	<i>Phalacrocorax carbo</i>												-
9. Wedge-tailed Eagle	<i>Aquila audax</i>												-
10. Australian Hobby	<i>Falco longipennis</i>												
11. Grey Falcon (V)	<i>Falco hypoleucos</i>												
12. Nankeen Kestrel	<i>Falco cenchroides</i>			-								-	-
13. Crested Pigeon	<i>Ocyphaps lophotes</i>												-
14. Peaceful Dove	<i>Geopelia striata</i>												-
15. Glossy Black-cockatoo (V)	<i>Calyptorhynchus lathami</i>												
16. Galah	<i>Cacatua roseicapilla</i>	-	-	-	-					-	-	-	-
17. Sulphur-crested Cockatoo	<i>Cacatua galerita</i>												
18. Little Lorikeet	<i>Glossopsitta pusilla</i>												
19. Australian King-Parrot	<i>Alisterus scapularis</i>												-
20. Eastern Rosella	<i>Platycercus eximius</i>	-	-		-								

Status: P = Protected, U = Unprotected, # = Exotic, + = Listed Threatened Process

L = Occurrence in the Lease Area.

^ = Species not recorded previously on the Tarrawonga site.

It is nevertheless interesting to note that a couple of Red Kangaroos were observed using the Bull Oak plot (currently assigned Plot 9) for shelter. This probably close to their eastern distribution limit and reflect the current dry conditions farther west that here this semi-arid zone species is coming closer to the northern slopes and plains.

It is also noteworthy that the Euros are becoming more common on Tarrawonga where they have taken to foraging on the cleared and rehabilitated areas.

3.3 Bats

The following bats were recorded in the various plots during these monitoring samples. The species recorded are marked against the list of species recorded during the project proposal survey.

Common Name	Scientific Name	Status	Corridor	Plot 6
			6.50hrs	8.1hrs
1 White-striped Mastiff-bat	<i>Nyctinomus (Tadarida) australis</i>	P	-	-
2 Little Mastiff-bat	<i>Mormopterus spp</i> (<i>M. planiceps Complex sp 3 and sp 4</i>)	P	-	-
3 Little Pied Bat	<i>Chalinolobus picatus</i>	V		
4 Chocolate Wattle Bat	<i>Chalinolobus morio</i>	P		
5 Long-eared Bats	<i>Nyctophilus spp</i>	P	-	
6 Gould's Wattle Bat	<i>Chalinolobus gouldii</i>	P	-	-
7 Little Forest Bat	<i>Vespadelus vulturinus</i>	P	-	-
8 Little Broad-nosed Bat	<i>Scotorepens greyii</i>	P		
9 Yellow-bellied Sheathtail Bat	<i>Saccolaimus flaviventris</i>	V	-	
10 Western Broad-nosed Bat^	<i>Scotorepens balstoni</i>	P		

^ = Species not recorded previously on the Tarrawonga site.

Nine of the 12 species or so microbats including two listed vulnerable species, in the Tarrawonga Coal mine lease area, were recorded during this survey. Notable, *Nyctophilus spp.* were absent in the forest plots and the call frequency for this species along the habitat corridor remnant was also down to only a few discernable call sequences. Also see previous report for comments regarding the identification of *Nyctophilus spp* and *Scotorepens balstoni*.

The drop in the density of calls is not confined to the Tarrawonga Coal Mine area as it was also noted in the Whitehaven site nearby.

No attempt was made at this stage to record bat calls from the cleared rehabilitation areas due to its early stage of rehabilitation.

3.4 Reptiles

The following reptiles, all protected species, were recorded on the various plots marked against a list of species that were recorded during the mine proposal baseline survey.

^ = Species not recorded previously on the Tarrawonga site.

Common Name	Scientific Name	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11	L
1. South-eastern Morethia Skink	<i>Morethia boulengeri</i>	-	-			-	-	-		-			
2. Tree-crevice Skink	<i>Egernia striolata</i>	-											
3. Lace Monitor	<i>Varanus varius</i>												
4. Dwarf Skink	<i>Menetia greyii</i>												
5. Prickly Gecko	<i>Heteronotia binoei</i>												
6. Nobbi Dragon	<i>Amphibolurus nobbi</i>	-				-							
7. Robust Skink	<i>Ctenotus robustus</i>												-
8. Excitable Delma	<i>Delma tincta</i>												
9. Wall Skink ^	<i>Cryptoblepharus pulcher</i> +						-						-
10. Eastern Bearded Dragon	<i>Pogona barbata</i>	-			-					-			
11. Bearded Dragon ^	<i>Pogona vitticeps</i>												
12. Basalt Snake-lizard ^	<i>Delma plebeia</i>	-	-	-									-
13. Spotted Lerista^	<i>Lerista punctativittata</i>												
14. Variegated (Common) Dtella	<i>Gehyra variegata</i>											-	
15. Common (Eastern) Bluetongue	<i>Tiliqua scincoides</i>												
16. Eastern Snake-necked Turtle	<i>Chelodina longicollis</i>												-
17. Spotted Black Snake ^	<i>Pseudechis guttatus</i>							-					
18. Southern Rainbow Skink^	<i>Carlia tetradactyla</i>				-								-
19. Prickly Gecko^	<i>Heteronotia binoei</i>						-						

+ This species has probably been misidentified as *C. virgatus* (eastern parapatric species) or *C. carnabyi* (western parapatric species).

Two species not previously recorded in the EIS survey, the Southern Rainbow Skink and the Prickly Gecko, were recorded in this sample. They are both protected native species that are generally quite common. The possible reasons for the general cumulative increase in the number of species recorded since the original sample for the proposed mine are discussed in the last survey report.

There was an improvement in reptile sightability from the dying off of the grasses. The ground cover of native and exotic grasses has started to decay and open up creating foraging and sunning areas for these animals. As well there is an improvement of habitat patches quality for these animals from the destocking. This is reflected in the census, especially the skinks.

Other than *Delmas* now being recorded wherever the native tussock grass has been able to regenerate significantly, the Eastern Bearded Dragon was recorded three plots including Plot 8 in the grassland.

To overcome some of the sightability problems with dense ground cover, we have suggested that monitoring plots that have little or no ground level structural component be augmented with 20 or so randomly placed roof tiles. This technique has been shown to be highly effective in attracting reptiles under them and their presence can be more easily determined when there is a flash of ground cover.

3.5 Amphibians

The frog species previously recorded on the Tarrawonga Coal Mine site are all protected species as listed below.

Scientific Name	Common Name
1. <i>Litoria latopalmata</i>	Broad-palmed Frog
2. <i>Litoria caerulea</i>	Green Tree Frog
3. <i>Litoria peronii</i>	Peron's Tree Frog
4. <i>Litoria rubella</i>	Desert Tree Frog
5. <i>Uperoleia rugosa</i>	Wrinkled Froglet
6. <i>Limnodynastes peronii</i>	Striped Marsh Frog

No frog or frog breeding activity was recorded during this survey. This is curious as this survey had been preceded by unseasonal warm weather. I can only surmise that, notwithstanding the rain that followed those high temperatures, the return to the colder temperatures subsequently have caused them to return to inactivity for the time being. Future samples, maybe later in Spring when the warmer weather is well set in, will be able to establish the persistence of these species in Tarrawonga next year.

The lack of frog activity this season was also noted in the Whitehaven site nearby.

4.0 Comments

This survey, except for the reptiles, has yielded poorer results than the February 2009 samples. Only future samples can establish if this drop in fauna richness has been due to temporary seasonal factors or that the local fauna is responding to the press impact (long term cumulative impact) with the progression of the mine.

Some complications may arise in the interpretation of the data collected for the Tarrawonga monitoring program from any cumulative effect from the operation of other mine in Leard SF. The habitat used in the proposed Woodland Control plot may be isolated by the two mining operations. As well, the results from the other monitoring plots in Tarrawonga may be affected by the collective impact of these two mines occurring next to each other.

An additional Control plot in the Woodland habitat in the adjoining State Forest has yet to be established.

The above notwithstanding, the sampling of reptiles in Tarrawonga can be facilitated in a number of plots with little or no ground structural component with the augmentation with 20 randomly placed roof tiles in each plot. Plots 2, 3, 4, and 8 plus the new northern rehabilitation Plot 10 will benefit from this treatment.

I have discussed this procedure with Mr. Geoff Cunningham who is confident that this habitat augmentation procedure will not compromise his botanical sampling or adversely impact upon the flora recording results in those plots.

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Summer Pre-start Tarrawonga Coal Mine ML 1579: **Fauna Impact Mitigation**

1.0 Preamble

The proposed clearing area to the northeast of the current pit representing the limit of the currently approved mining area which is demarked by the black line (see attached PDF of Subject Area) was proposed for the clearing and topsoil stripping in December 2009 and January 2010.

This area consists of:

- i) a small previously cleared area with scattered Narrow-leaf Ironbark, *Eucalyptus crebra* and thin regenerating White Callitris Pine, *Callitris glaucophylla*, at the top of a knoll adjacent to the current pit immediately to the northeast of the high wall,
- ii) a community of thick Callitris regeneration 8-10m in height with scattered Ironbark 10-12m in height around the upper slopes of this knoll, and
- iii) a band of White Box, *Eucalyptus albens*, up to 15m in height between the current pit limit and top of the knoll and the lower slopes in the gully in the southeastern corner of the proposed clearing area.

The small area at the top of the knoll was subjected to a pre-clearing check before top soil stripping was carried out over the thin regenerating Callitris. No nesting activity was observed in the six scattered Ironbark in the stripped area or the surrounding trees in early December 2009 when this clearing was carried out.

2.0 Pre and Post-clearing Checks

A pre-clearing inspection was carried out over the balance of the area on 20 Jan 2010. This included:

- i) daylight inspection of the area on foot to located nesting birds and potential roosting and nesting tree hollows,
- ii) dusk call back broadcast to ascertain existence of owls, curlews and Koalas in the area.
- iii) A spotlight search on foot and from a vehicle of the subject and surrounding areas for nocturnal species, and
- iv) Bat call recording to detect any evidence of roosting of any listed threatened microbats in the vicinity.

These sampling procedures were followed up with an early morning inspection of the subject area and the following species were recorded:

- i) a Brown Hare, *Lepus capensis*, and two Common Wallaro, *Macropus robustus*, just outside the subject area and a small group of Grey Kangaroos, *Macropus giganteus*, in the gully and lower slopes of the subject area,
- ii) 17 recognisable calls that could be attributed to the listed Threatened Yellow-bellied Sheathtail Bat, *Saccolaimus flaviventris*, but they were scattered over 6hrs of recordings with no evidence of a roosting call sequence, and
- iii) a number of birds viz,

Rufus Whistler, *Pachycephala rufiventris*

Willy-wagtail, *Rhipidura leucophrys*

Singing Honeyeater, *Lichenostomus virescens*

Black-faced Cuckoo-strike, *Coracina novaehollandiae*

Striated Thornbill, *Acanthiza lineata*

Peaceful Dove, *Geopelia striata*,

Red-capped Robin, *Petroica goodenovii*

Double-barred Finch, *Taeniopygia bichenovii*

A Wren, *Malurus* sp, was also sighted but as only females were noted the species was indistinguishable.

The large number of calls from *S. flaviventris* can be attributable to the relatively high location of the ultrasonic recorder being placed in the middle of the subject site on northwestern edge of the knoll.

Two nests were located on the flats in the White Box community below the gully near the southeastern corner of the area that has been proposed for proposed clearing. Neither nest was active or could be attributable to the Grey-crowned Babbler, *Pomatostomus temporalis*.

Due to the high daytime maximum temperature reaching the 37°C, the larger trees were pushed over with a dozer only during the late afternoon and early evening of 21 Jan 2010. A post-tree falling inspection was immediately conducted over the area to ensure no affected fauna was left unattended.

This inspection turned up two common reptile species, the Tree-crevice Skink, *Egernia striolata* and the Wall Skink, *Cryptoblepharus pulcher*. It is noteworthy that a Speckled Warbler, *Pyrrholaemus sagittus*, a listed Threatened Species was observed coming in from the surrounding woodland outside the subject site to forage among the fallen timber.

It is also of interest to note the occurrence of a Wandering Whistling-duck, *Dendrocygna arcuata*, in a mine dam immediately to the south of the subject site. The Boggabri region is probably close to the southern limits of its distribution and this may represent a new record of this species for this area.

3.0 Conclusion

I am satisfied that adequate precautions have been taken to minimise any adverse impact on the native fauna community for this out-of-season clearing. This is caveat upon the balance of the subject area of Callitris regrowth being cleared relatively soon, say within a week, and a subsequent post clearing check is conducted immediately to ensure that any affect fauna is not left unattended.

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25 January 2010