

**Report to the Saving Our Species Program of the Office of
Environment and Heritage on the status of the Grey Grasswren
Amytornis barbatus barbatus in Narriearra Station – September
2015.**

**J. R. Farrell, J. W. Hardy and K. Wilkins
on behalf of the Australian Bird Study Association Inc.
November 2015**



INTRODUCTION

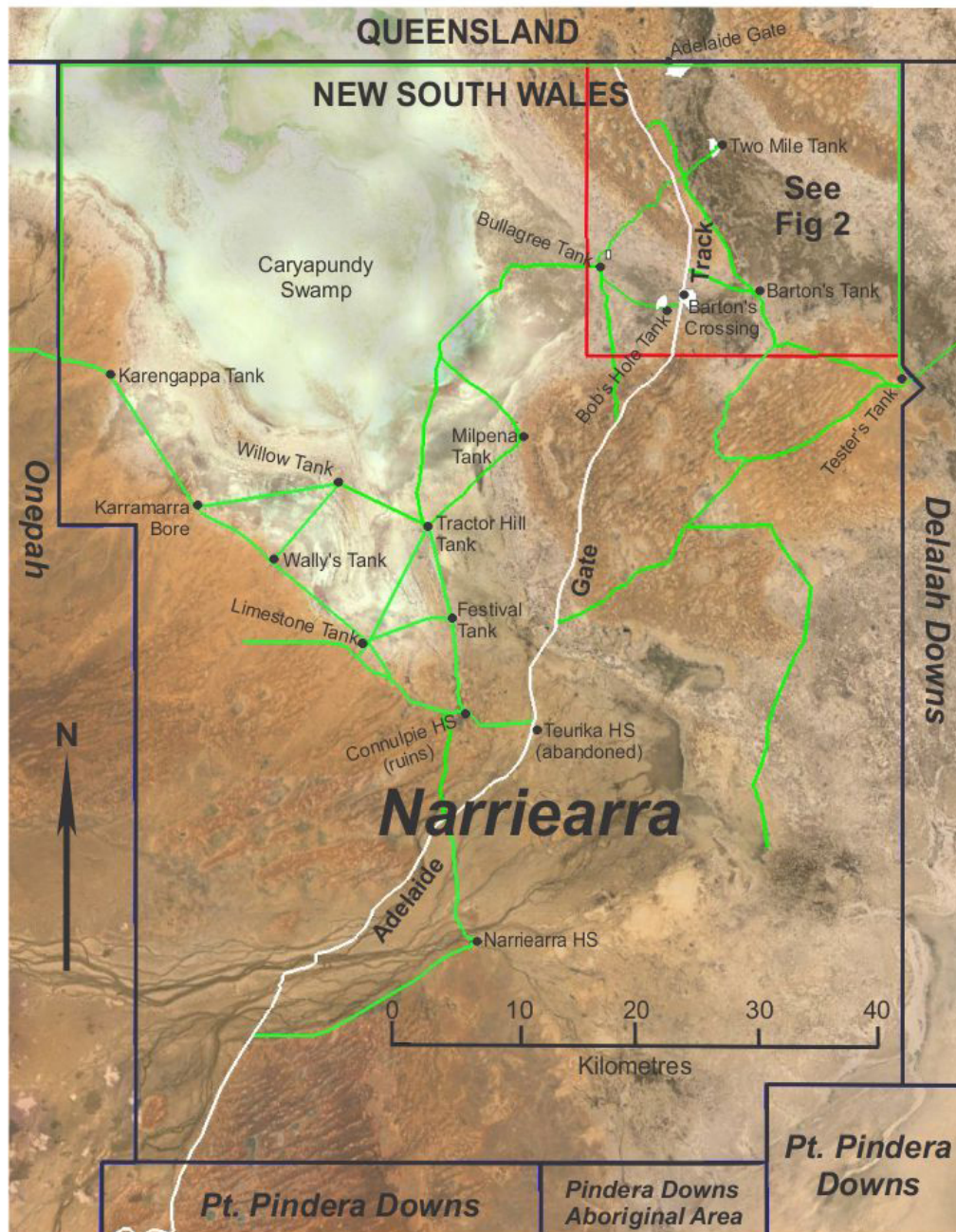


Figure 1. Map showing boundaries of Narriearra Station

Monitoring of the status of the threatened Grey Grasswren *Amytornis barbatus barbatus* and the condition of its habitat on Narriearra Station was instigated in 2014 when the NSW Office of Environment and Heritage's (OEH) Saving Our Species Program contracted the Australian Bird Study Association Inc. (ABSA) to undertake the initial survey. The ABSA recruited volunteers that undertook the initial survey in April/May 2014.

One of the recommendations contained in the ABSA's subsequent report to OEH was that follow-up surveys be undertaken in late winter and/or early spring. The previous experience of researchers suggested that the target birds would be most vocal in the breeding and post-breeding period of August/September and thus easier to locate at that time of year.

The ABSA was subsequently contracted to repeat the survey in the Spring of 2015. This report documents the results of the second survey, which was carried out from 1st to 10th September 2015 by a team of seven volunteer researchers. It is recommended that this report be read in conjunction with the previous report (Farrell *et al.* 2014).

The monitoring protocols outlined in the previous report (Farrell *et al.* 2014) were replicated for the 2015 survey and in the preparation of this report, to provide data to:

1. Compare changes in Lignum health over the intervening fifteen months from three locations (Adelaide Gate, Two Mile Tank and Barton's Crossing).
2. Determine presence/absence of Grey Grasswrens at four potential habitat locations identified in 2014 (transect numbers 1 to 4 in Fig. 3)
3. Determine the composition of Grey Grasswren population from trapping and banding at three sites (Adelaide Gate, Two Mile Tank and Barton's Crossing) – number of males v's females; breeding; number of juveniles; morphometrics.
4. Determine the longevity and movements of any retrapped individuals.

METHODOLOGY

1. Vegetation surveys were carried out using the methodology described by Farrell *et al.* (2014). A schematic example of this methodology is presented in Fig.2.

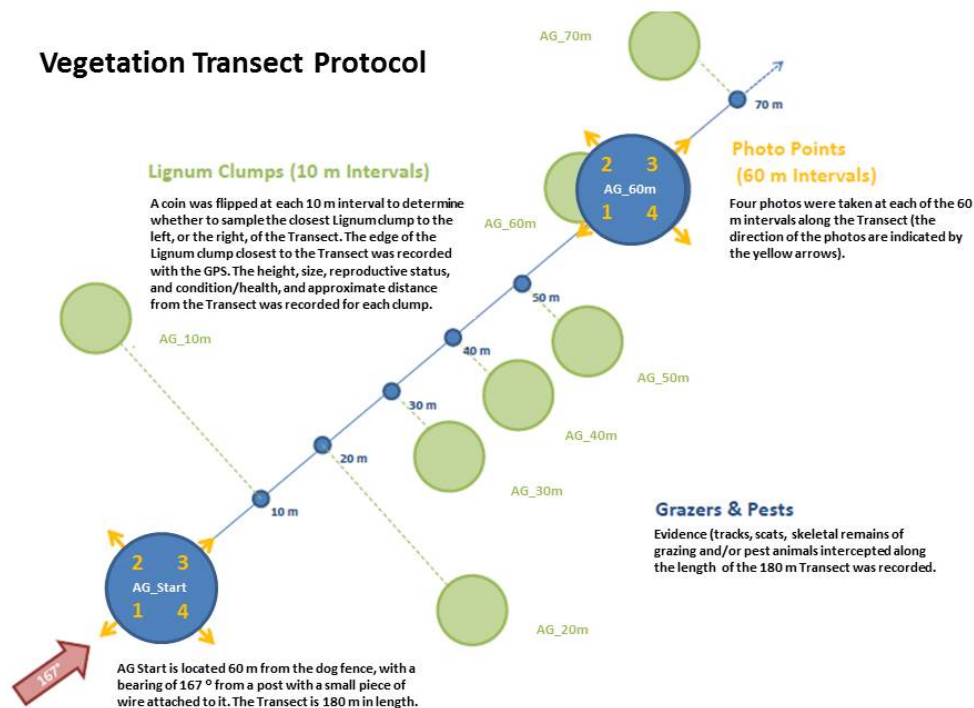


Figure 2. Schematic representation of vegetation transect protocol.

2. Avian transects established and documented in the 2014 survey were repeated and no additional transects were established in this survey (Fig. 3).

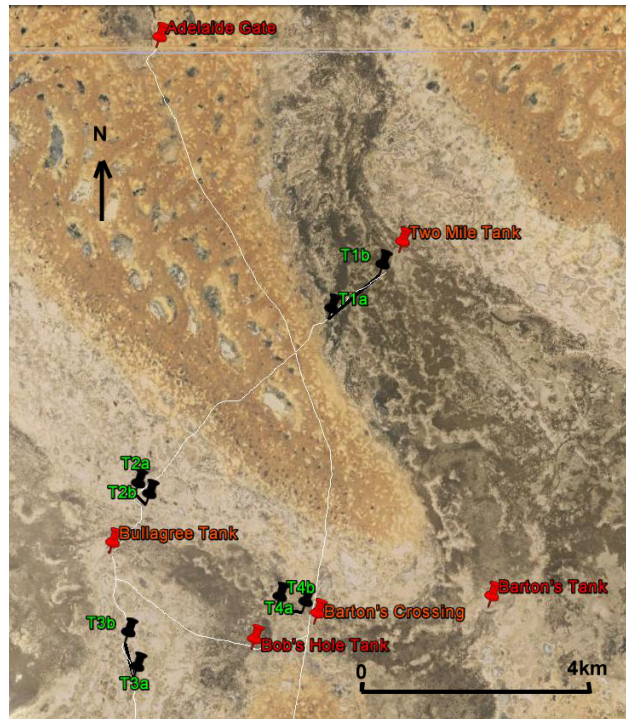


Figure 3. *Location of avian transects.*

3–4. Banding surveys were conducted in the three locations established in the 2014 survey, using the methodology described in Farrell *et al* (2014). Another banding site was established north of Bullagree Tank where the species had been observed during the 2014 survey period (Farrell *et al.* 2014). In addition to these sites an additional one was established near Bob's Hole Tank where Grey Grasswrens were seen while the survey team was traversing the track leading to Bullagree Tank from Barton's Crossing (Fig. 4).

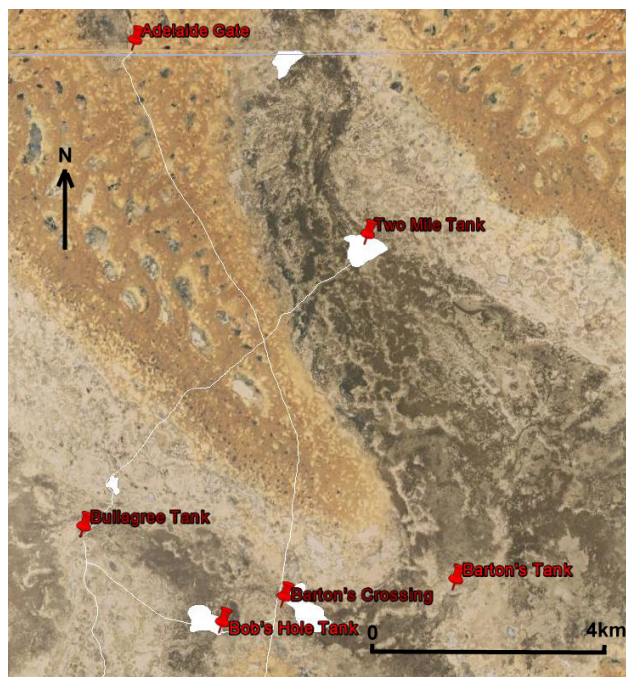


Figure 4. *Location of the five banding sites (white)*

STUDY SITE

There were several short, but quite substantial periods of local rainfall during the first half of 2015. This was not sufficient to create flows within the flood channels, but allowed the vegetation across the property to regenerate to a substantial extent.

During the period of this survey conditions were mainly dry across the study area although a few pools of water existed adjacent to the New South Wales/Queensland Border Fence due to recent runoff from the road. Several pools also remained in the channel west of Barton's Crossing and close to Bullagree Tank. Some pools noted during the first few days of this survey had dried up before our departure and several shallow clay pans along the track from Two Mile Tank to Bullagree Tank dried out during the survey period. Sandy ridges from Barton's Crossing to Adelaide Gate had recently been covered by flowering ground plants and were in the process of dispersing their seeds (Figs 4 and 5).



Figure 4. *Flowering in early June 2015*



Figure 5. *Withering plants beside Adelaide Gate Track and concentration of wind-blown seeds*

It is worth noting that every ground tank that we encountered during this survey, with the exception of Two Mile Tank, contained large volumes of water and cattle were present at all. This probably also contributed to the wide dispersal of cattle over the property. However, the concentration of cattle around some of these, particularly Bob's Hole, Bullagree, Limestone,

Tester's and Barton's tanks, would contribute to continual grazing of nearby young Lignum shoots. The amount of standing water at the five banding sites is tabled below.

Amount of Standing Water		
Two Mile Tank Site	→	Totally dry with no standing water
Barton's Crossing Site	→	1 Totally dry – some water in channel farther downstream from banding site
Adelaide Gate Site	→	Totally dry – some pools adjacent to road following the Border Fence but just outside banding area
Bob's Hole Tank Site	→	2 Channels dry with some water flowing a short distance from Bob's Hole Tank - some water in channel farther upstream from banding site
Bullagree Tank Site	→	3 Small pools of standing water in channel but evaporated by the end of survey.
		4 Many pools of standing water in channels plus larger pools on clay pans
		5 Water flowing along channels with most clay pans covered in water

Table 1. Amount of standing water at the five banding sites

Hydrologically, the Bulloo River is very similar to the Darling River and Cooper Creek. It is usually completely dry except for water holes, but during years of strong monsoonal activity in the summer the Bulloo can flood heavily to discharges of more than 1000 m³/s, and annual flows of up to five times the mean (Brown). In dry years annual rainfall can be as low as 100mm (4 inches) throughout the basin and years of zero runoff are common (Willcocks *et al.*)

The Bulloo is the only river in the region that is not part of either the Murray–Darling basin or the Lake Eyre basin; instead it flows into several ephemeral lakes and flood channels which are blocked by low hills from reaching Lake Frome, the Paroo River or the Lake Bancannia systems. During major flood events the Bulloo Lakes, Caryapundy Swamp and the Lignum-filled flood channels to the east thereof flow generally south to the Bulloo River Overflow where the waters eventually evaporate.



Figure 6. This satellite image shows the hydrological inflow channels from the Bulloo River to the Bulloo Lakes, Caryapundy Swamp, the channels to the east thereof and eventually to the Bulloo River Overflow. The sizes of the black arrows are a graphical portrayal of the volume of water that is likely to flow through the various channels based on the height above sea level of those channels and the consequent proportion of floodwater that they are likely to disperse. The flow along Twelve Mile Creek (shown by red arrows) results from local rainfall events only.

References:

Brown, J. A. H. (John Alexander Henstridge); Australia's Surface Water Resources.

Willcocks, Jacqui and Young, Phillip; Queensland's Rainfall History: Graphs of Rainfall Averages, 1880-1988

RESULTS AND DISCUSSION

VEGETATION SURVEYS

The same scale was used to classify the size of Lignum clumps and the amount of flowering/budding/shoots.

*Clumps

6 = >5mx5m

5 = Between 5mx5m and 4mx4m

4 = Between 4mx4m and 3mx3m

3 = Between 3mx3m and 2mx2m

2 = Between 2mx2m and 1mx1m

1 = <1mx1m

Flowering/Budding/Shoots

5 = Plant covered in flowers/buds/shoots

4 = covering between 90% and 75%

3 = covering between 75% and 50%

2 = covering between 50% and 25%

1 = covering between 25% and 0%

0 = none observed

Adelaide Gate

Results:

Start:	S 28°	59.974'	74m asl	Acc 6m							
	E 142°	36.689'	Height (m)	*Clump	Flowering	Buds	New shoots	Suckering			
		From Tape							Scats, tracks etc	GPS Reading	
10m	Left	20m	2.5	6	0	0	2	No	Roo tracks and scats	S 28.999596	E 142.611719
20m	Right	30m	2.5	5	1	1	5	Yes	Roo tracks and scats	S 28.999699	E 142.611194
30m	On line		2	5	1	0	2	Yes	Roo tracks and scats; reptile scats	S 28.999924	E 142.611532
40m	On line		3	6	1	0	1	Yes		S 28.999826	E 142.611515
50m	On line		2.6	6	1	0	2	Yes		S 28.999994	E 142.611568
60m	On line		2.7	6	1	0	2	Yes		S 29.000084	E 142.611605
70m	On line		1.5	2	0	0	0	No	Rabbit and Roo scats	S 29.000155	E 142.611735
80m	Left	3m	2.3	6	5	0	3	Yes	Roo tracks; dog scats	S 29.000235	E 142.611169
90m	Right	19m	1.7	2	1	0	5	No	Rabbit, cattle and dog scats	S 29.000416	E 142.611549
100m	Left	4m	2	3	3	0	5	Yes	Dog scats	S 29.000431	E 142.611751
110m	Right	47m	3.1	6	3	2	5	Yes	Roo tracks	S 29.000626	E 142.611265
120m	Left	3m	3.2	5	3	0	5	Yes	Roo tracks	S 29.0006	E 142.611791
130m	Right	15m	3.5	6	2	0	5	Yes		S 29.000753	E 142.611666
140m	Left	2.5m	3.3	5	2	0	5	Yes	Rabbit scats; Roo tracks, cattle scats	S 29.000782	E 142.611856
150m	Right	4m	3.1	6	2	0	4	Yes	Cattle tracks and scats; Roo scats	S 29.000883	E 142.611813
160m	Right	10m	1.1	1	1	0	1		Small clump of ~100 suckers	S 29.001003	E 142.611776
170m	On line		2.5	6	1	0	1	No	Roo and rabbit scats	S 29.001029	E 142.611926
180m	Left	10m	3.3	6	1	0	1	Yes		S 29.001082	E 142.612033
		Average	2.6	4.9	1.6	0.2	3.0		NB. All droppings were desiccated except for several recent ones from kangaroos.		
		2014 Averages	2.2	5.1	1.7	0.7	2.4				

Discussion

- There was a slight increase in the height of the Lignum clumps from 2014 (2.6m vs 2.2m) which can be attributed to the increase in shoot development following local rainfall during the first half of 2015. New shoots tended to extend vertically from the clumps (3.0m vs 2.4m). The size of the clumps was similar (4.9m vs 5.1m) as was the amount of blossoms (1.6 vs 1.7) but as flowering was drawing to an end there were fewer buds present (0.2 vs 0.7).
- Comparison of photographs from prescribed points along the transect line show growth (via suckering and as individual plants) of Lignum plants on the channel floor between the larger Lignum clumps. Associated with these new Lignum plants were a variety of other ground plants (see photographs below).

Addition Observations

- Live rabbits were sighted and old but little used warrens were evident in the small sand ridges within the banding area.
- No kangaroos were sighted in the banding area although mobs were seen in the vicinity.
- No cattle were observed in the banding area but small groups had gathered at the few remaining pools of water adjacent to the Border Fence.
- No pigs were sighted but wallows were evident within the banding area although they didn't appear to be recent.



Figure 7. *Inundation of clay pan adjacent to transect in 2014*



Late May 2014



September 2015

Figure 8. *Comparison of plant growth along channel floor at 60m interval along transect line.*

Barton's Crossing

Results

Start:	S 29.08872		74m asl		Acc. 6m						
	E 142.61311										
	From Tape		Height (m)	*Clump	Flowering	Budding	Shoots	Suckering	Scats, tracks etc	GPS Reading	
10m	Right	5m	2.1	3	5		4	Yes	Roo tracks and scats; cattle pats		
20m	Left	1m	2	2	3		5	Yes	Roo scats; cattle pats		
30m	Right	6m	2	3	4		5	Yes	Cattle tracks and pats; Roo scats		
40m	On line		1.8	4	2		5	Yes	Cattle tracks and pats		
50m	Left	6m	1.9	3	1		4	Yes	Pig scat?; Roo scats		
60m	Right	7m	1.7	2	1		5	Yes	Roo scats	S 29.088393	E 142.61357
70m	Left	6m	1.4	3	1		5	Yes	Roo scats and tracks; cattle tracks		
80m	Left	5m	1.1	2	1		1	No	Cattle tracks and pats; roo scats		
90m	Right	5m	1.3	3	1		5	No	Cattle tracks		
100m	On line		2.5	6	1		4	No	Cattle tracks and pats		
110m	Right	12m	1.8	4	5		3	Yes	Roo scats; pig and cattle tracks		
120m	Right	3m	1.6	4	4		5	Yes	Cattle pats	S 29.088043	E142.614037
130m	Left	4m	1.8	2	2		4	No	Cattle pats and tracks; pig tracks; roo and rabbit scats		
140m	Left	4m	2.3	5	2		5	Yes	Roo scats		
150m	On line		1.5	3	4		5	Yes	Cattle tracks and pats; roo scats		
160m	Left	4m	1.5	2	1		3	Yes	Cattle tracks		
170m	Left	13m	2.2	5	1		1	Yes	Cattle pats and tracks; pig tracks		
180m	Right	15m	0.5	1	0		4	No		S 29.087708	E 142.614495
Average			1.7	3.2	2.2	0.0	4.1				
2014 Averages			1.7	3.3	2.2	0.6	2.4				

Discussion:

- There was virtually no change in average clump height, width or extent of flowering although plants did show greater development of new shoots and suckers.
- Photographs below show that the site was much drier than in 2014 but the flush of green then was due to localized rather than widespread rainfall.



2014



2015

Figure 9. Comparison of vegetative cover at Barton's Crossing.

Additional Comments:

- One small group of kangaroos was observed near the site and within the Lignum.
- A pig was sighted within the banding site and another was also seen near the Bob's Hole Tank Site.
- Although no horses were sighted, fresh horse droppings were evident at the site
- Several live rabbits were seen
- A small group of cattle were observed just west of the banding site around Bob's Hole Tank where they came in to drink.

Two Mile Tank

Results:

Start:	S 29d 01.84m	78m asl	Acc. 5m							
	E 142d 37.537m									
	From Tape		Height (m)	*Clump	Flowering	Budding	Shoots	Suckering	Scats, tracks etc	GPS Reading
10m	R	1m	1.8	3	1		2	Yes	Roo scats; cattle tracks	
20m	R	1m	2.3	3	1		1	Yes	Cattle pats; Roo scats	
30m	L	0.6m	1.9	3	1		2	Yes	Cattle pats; Roo scats	
40m	L	2m	1.4	2	1		3	No	Cattle pats; Roo scats	
50m	On line		2.2	6	1		3	No	Cattle pats	
60m	L	4m	1.2	1	0		3	No	Roo scats	S29d 01.822m E142d 37.506m
70m	On line		2.5	3	0		1	Yes	Roo scats; cattle pats	
80m	On line		2	4	1		1	Yes	Roo scats	
90m	L	1m	1.3	1	0		2	No	Roo scats	
100m	L	5m	3.2	6	1		1	Yes	Cattle pats; roo scats	
110m	R	5m	2.3	4	0		3	No	Roo scats and pig tracks	
120m	L	10m	1.8	2	0		1	Yes	Cattle tracks and pats	S29d 01.801m E142d 37.477m
130m	L	3m	2	6	0		1	Yes	Cattle pats	
140m	On line		2.2	5	0		1	No	Pig tracks	
150m	L	7m	1.9	6	0		3	Yes	Cattle pats and roo scats	
160m	L	5m	2.4	3	0		4	No	Cattle tracks	
170m	On line		2.5	4	0		1	Yes	Cattle tracks	
180m	On line		2	4	0		1	Yes	Cattle tracks	S29d 01.781m E142d 37.450m
Average			2.1	3.7	0.4	0	1.9			
2014 Averages			1.8	4.1	0	0.5	0.7			

Discussion:

- There was little change between the two surveys except that there was clear evidence of new growth on established clumps of Lignum and more extensive suckering across the channel floor.

Additional Comments:

- The banding site was traversed by many cattle tracks heading towards/away from Two Mile Tank – their droppings were recorded throughout the banding area.
- Many kangaroos were sighted on the sand ridges flanking the channel but none within the Lignum clumps.
- Small groups of cattle were observed outside the area of Lignum.
- Pig tracks were also observed crossing the transect.



2014



2015

Figure 10. *Comparison of the extent of suckering on channel floor from 2014 to 2015*

SUMMARY

Lignum

The flowering of Lignum occurred between April and September but the extent varied over a very short distance from site to site. New growth was much more prevalent at this survey – some newly established Lignum plants had grown up to approximately 1 metre in height, particularly on the clay pans at Adelaide Gate some of which had been inundated during the early days of the 2014 survey and supplementary widespread soaking rains during the first half of 2015. It appears that Lignum is a major proportion of the cattle diet only during very dry conditions when other herbage is not readily available. As a consequence of the rainfall, plant regrowth across the property and the availability of good water supplies in most ground tanks, cattle were dispersed away from the Lignum areas.

Domesticated stock, native and feral animals

Because of the availability of diverse foraging resources, cattle were dispersed across the property, unlike in 2014 when cattle were concentrated to a significant extent in and around the major Lignum areas. However, it should also be noted that some 2 300 head of cattle had been mustered and destocked in May/June 2015, reducing the total number of cattle on the property by some 40% (pers comm to JWH by Bill O'Connor, property owner). Thus the grazing pressure had been reduced significantly during the three months preceding this survey.

Kangaroos were numerous throughout the property, but few were seen within the Lignum, although their droppings were recorded throughout each banding site.

Feral pig scats, tracks and wallows were recorded throughout the Lignum area, but the only live animals sighted were near Barton's Crossing. The remains of feral pigs that had been shot were recorded near Two Mile Tank.

Several rabbits were seen at Barton's Crossing and Adelaide Gate and their scats were prevalent throughout the area.

The only evidence of horses in the Lignum was some recent droppings at Barton's Crossing. A small herd was sighted near Limestone Tank.

Again there was no evidence of the existence of goats on *Narriearra* property.

Dingo/wild dog tracks were noted at several places in Lignum areas, but the only animals sighted were two dingoes near Limestone Tank.

BANDING AREAS

Adelaide Gate Site

Results:

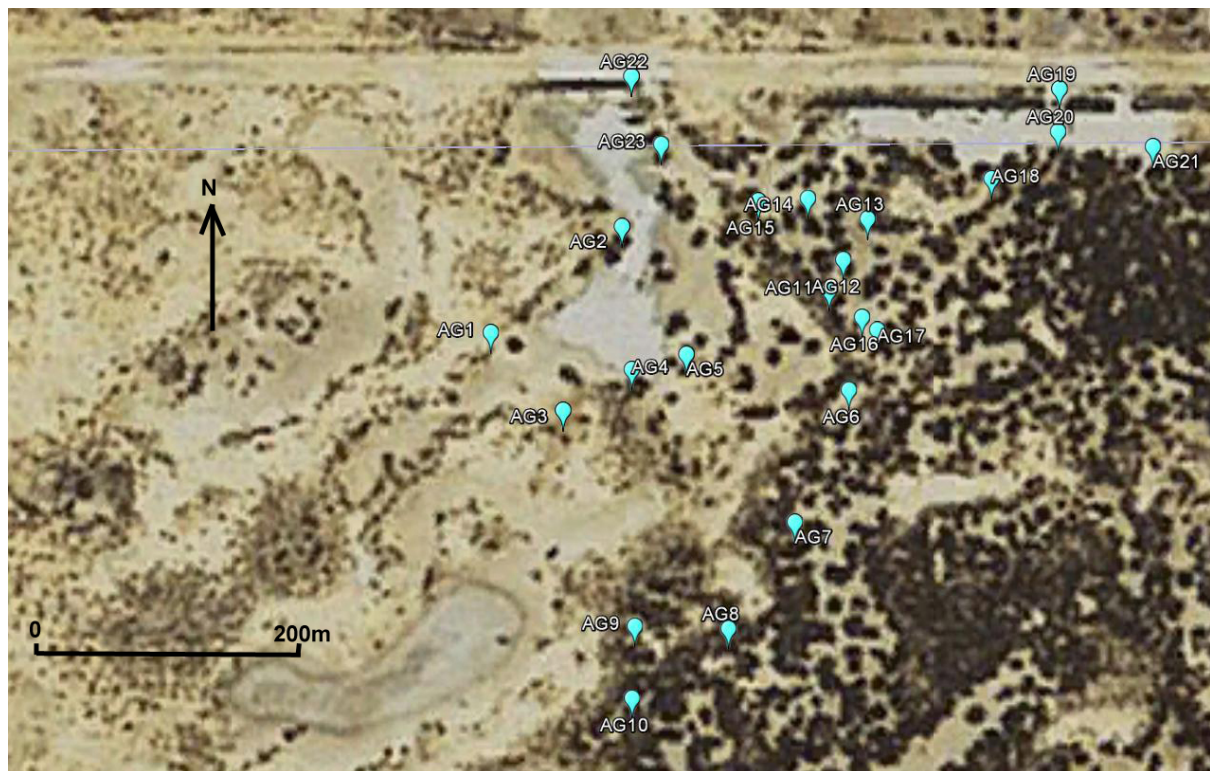


Figure 11. Satellite image showing positions of nets erected at the Adelaide Gate site. Image courtesy of Google Earth.

Banding was carried out on 4 September for seven hours, from 0730 hrs to 1430 hrs. Seventeen nets were erected totalling 234 m: five nets were erected in more open areas of saltbush adjacent to the area of dense Lignum; the rest were placed within the Lignum thickets.

Adelaide Gate Site	
4.9.15	
No of Nets	17
Total Length (m)	234
Time opened	0730
Time closed	1430
Hours open	7

Table 2. Banding effort at Adelaide Gate Site (4 September)

Grey Grasswrens were heard and seen near AG20 and AG21 but none were captured. In total 24 species were seen or heard within the banding area with seven species being trapped and banded (Table 2).

Adelaide Gate Site		4 . 9 . 15	
Species		No banded	Sighted/Heard
Crested Pigeon	<i>Ocyphaps lophotes</i>		X
Diamond Dove	<i>Geopelia cuneata</i>		X
Peaceful Dove	<i>Geopelia striata</i>		X
Black Kite	<i>Milvus migrans</i>		X
Wedge-tailed Eagle	<i>Aquila audax</i>		X
Caspian Tern	<i>Hydroprogne caspia</i>		X
Galah	<i>Eolophus roseicapillus</i>		X
Budgerigar	<i>Melopsittacus undulatus</i>		X
Blue-winged Parrot	<i>Neophema chrysostoma</i>		X
Horsfield's Bronze-Cuckoo	<i>Chalcites basal</i>		X
Red-backed Kingfisher	<i>Todiramphus pyrrhopygius</i>		X
White-winged Fairy-wren	<i>Malurus leucopterus</i>	1	X
Variegated Fairy-wren	<i>Malurus lamberti</i>	12	X
Grey Grasswren	<i>Amytornis barbatus</i>		X
Redthroat	<i>Pyrrholaemus brunneus</i>	9	X
Pied Honeyeater	<i>Certhionyx variegatus</i>	10	X
Singing Honeyeater	<i>Lichenostomus virescens</i>	4	X
Crimson Chat	<i>Epthianura tricolor</i>	3	X
Black Honeyeater	<i>Sugomel niger</i>	2	X
Chirruping Wedgebill	<i>Psophodes cristatus</i>		X
White-winged Triller	<i>Lalage sueurii</i>		X
Little Raven	<i>Corvus mellori</i>		X
Welcome Swallow	<i>Hirundo neoxena</i>		X
Zebra Finch	<i>Taeniopygia guttata</i>		X
TOTAL		40	

Table 3. Species heard or seen, and banded at the Adelaide Gate Site.

Two Mile Tank Site

Results:

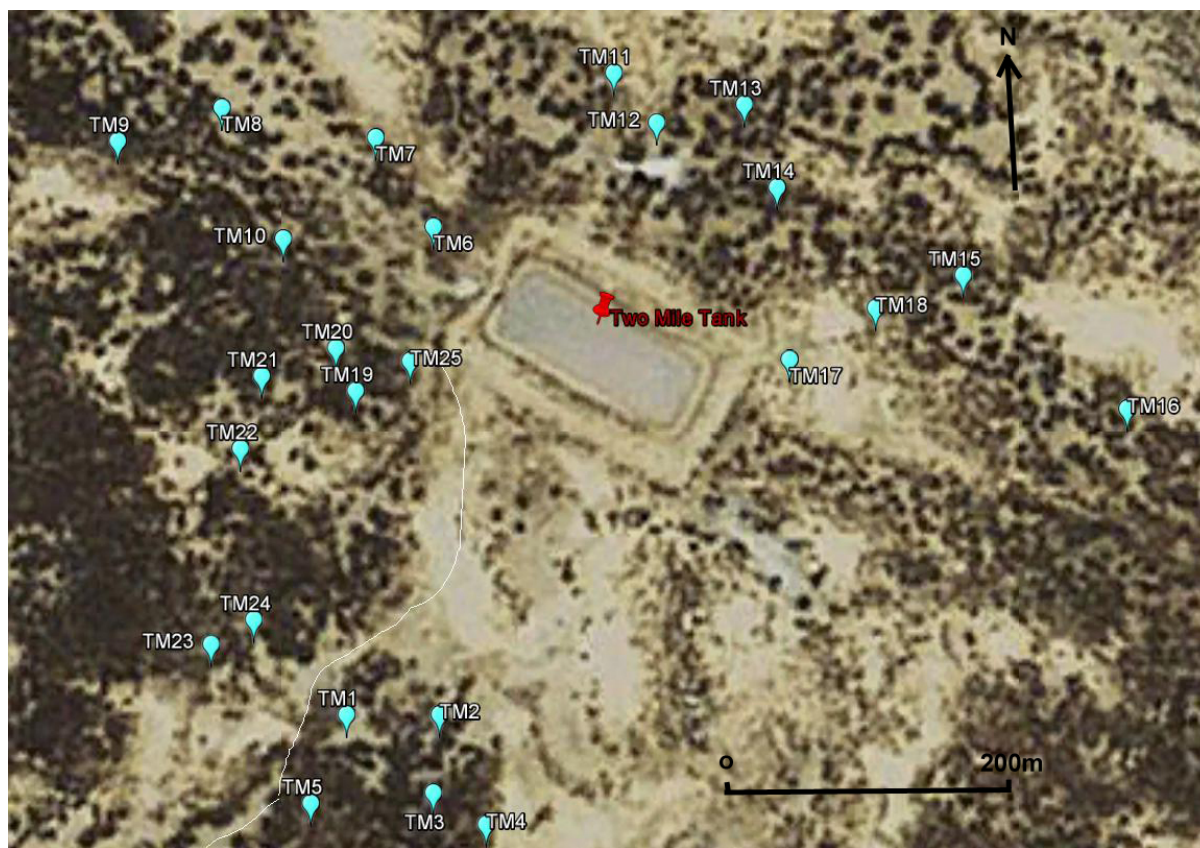


Figure 12. Satellite image showing positions of nets erected at the Two Mile Tank Site. Image courtesy of Google Earth.

Banding was carried out on the afternoon of 7 September for 2 hours when 16 nets totalling 222 m were erected. On the following day (8 September) an additional 9 nets were erected, bringing the total length to 333 m. These were opened for 7 hours. Most nets were erected within the thickets of Lignum.

Two Mile Tank Site		
	7.9.15	8.9.15
No of Nets	16	25
Total Length (m)	222	333
Time opened	1430	0700
Time closed	1630	1400
Hours open	2	7

Table 4. Banding effort at Two Mile Tank Site (7-8 September)

Grey Grasswrens were heard just north of Two Mile Tank but none were sighted. Twenty different bird species were sighted or heard over the two days. Twenty-nine individuals representing nine species were banded (Table 4).

Two Mile Tank Site		7 – 8 . 9 . 15	
Species		No banded	Sighted/Heard
Crested Pigeon	<i>Ocyphaps lophotes</i>		X
Galah	<i>Eolophus roseicapillus</i>		X
Cockatiel	<i>Nymphicus hollandicus</i>		X
Budgerigar	<i>Melopsittacus undulatus</i>		X
Blue-winged Parrot	<i>Neophema chrysostoma</i>		X
Horsfield's Bronze-Cuckoo	<i>Chalcites basalis</i>	2	X
Red-backed Kingfisher	<i>Todiramphus pyrrhopygius</i>		X
White-winged Fairy-wren	<i>Malurus leucopterus</i>	3	X
Variegated Fairy-wren	<i>Malurus lamberti</i>	4	X
Grey Grasswren	<i>Amytornis barbatus</i>		X
Redthroat	<i>Pyrrholaemus brunneus</i>	4	X
Pied Honeyeater	<i>Certhionyx variegatus</i>	5	X
Singing Honeyeater	<i>Lichenostomus virescens</i>	6	X
White-fronted Honeyeater	<i>Purnella albifrons</i>	1	X
Crimson Chat	<i>Epthianura tricolor</i>	2	X
White-fronted Chat	<i>Epthianura albifrons</i>		X
Black Honeyeater	<i>Sugomel niger</i>		X
Chirruping Wedgebill	<i>Psophodes cristatus</i>		X
White-winged Triller	<i>Lalage sueurii</i>		X
Willie Wagtail	<i>Rhipidura leucophrys</i>		X
Zebra Finch	<i>Taeniopygia guttata</i>	2	X
TOTAL		29	

Table 5. Species heard or seen, and banded at the Two Mile Tank Site.

Barton's Crossing Site

Results:

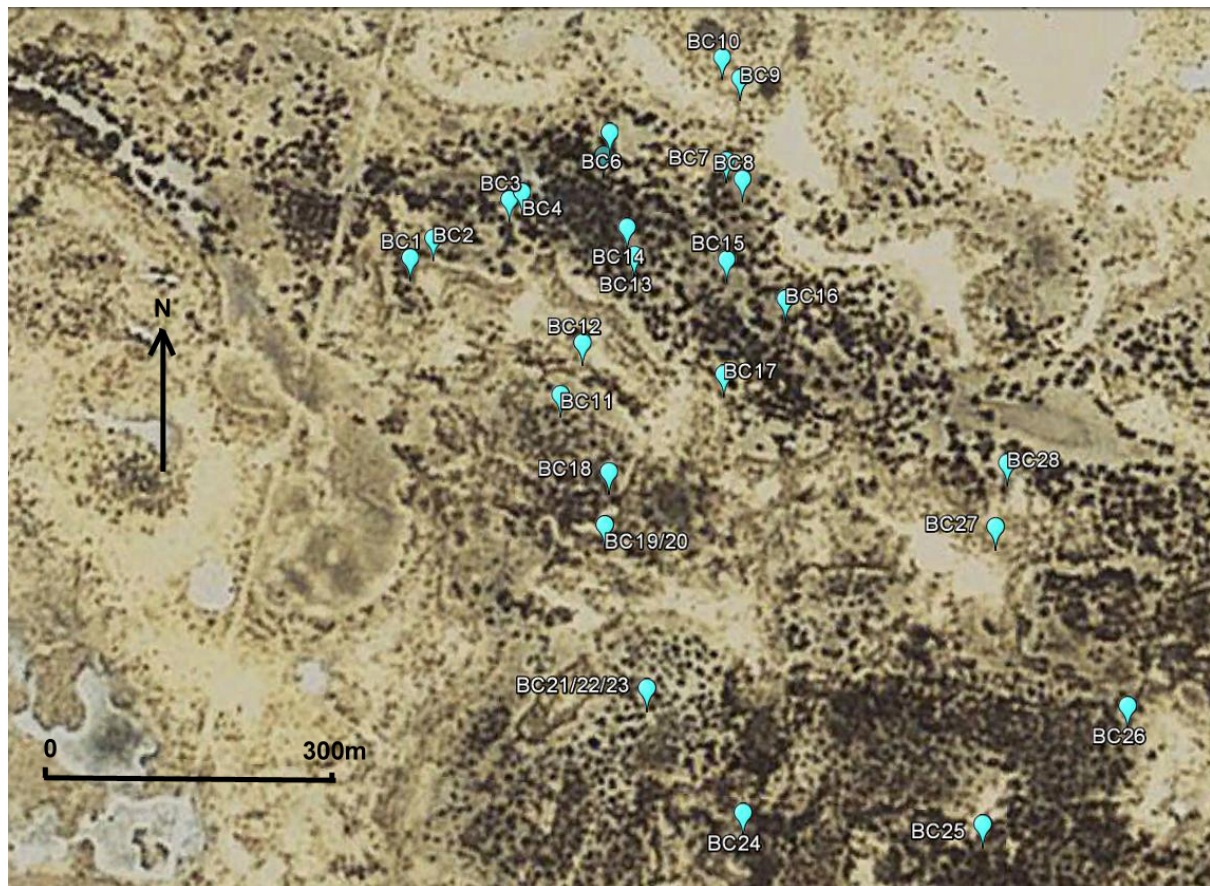


Figure 13. Satellite image showing positions of nets erected at the Barton's Crossing Site. Image courtesy of Google Earth.

Twenty-eight nets (totalling 349.5 m) were erected at the Barton's Crossing Site on 1 September and were opened for 9 hours (Table 6).

Barton's Crossing Site	
1.9.15	
No of Nets	28
Total Length (m)	349.5
Time opened	0730
Time closed	1630
Hours open	9

Table 6. Banding effort at Barton's Crossing Site (1 September)

Twenty-four bird species were seen or heard, with 41 individuals from 7 species being trapped and banded (Table 7). Grey Grasswrens were both heard and sighted at this site, but none were captured.

Barton's Crossing Site		1. 9 . 15	
Species		No banded	Sighted/Heard
Crested Pigeon	<i>Ocyphaps lophotes</i>		X
Diamond Dove	<i>Geopelia cuneata</i>		X
Whistling Kite	<i>Haliastur sphenurus</i>		X
Black Kite	<i>Milvus migrans</i>		X
Major Mitchell's Cockatoo	<i>Lophochroa leadbeateri</i>		X
Galah	<i>Eolophus roseicapillus</i>		X
Little Corella	<i>Cacatua sanguinea</i>		X
Cockatiel	<i>Nymphicus hollandicus</i>		X
Budgerigar	<i>Melopsittacus undulatus</i>		X
Blue-winged Parrot	<i>Neophema chrysostoma</i>		X
Horsfield's Bronze-Cuckoo	<i>Chalcites basalis</i>		X
White-winged Fairy-wren	<i>Malurus leucopterus</i>	2	X
Variegated Fairy-wren	<i>Malurus lamberti</i>	12	X
Grey Grasswren	<i>Amytornis barbatus</i>		X
Redthroat	<i>Pyrrholaemus brunneus</i>	14	X
Pied Honeyeater	<i>Certhionyx variegatus</i>	3	X
Singing Honeyeater	<i>Lichenostomus virescens</i>		X
Chirruping Wedgebill	<i>Psophodes cristatus</i>	1	X
Australian Raven	<i>Corvus coronoides</i>		X
Little Raven	<i>Corvus mellori</i>		X
Red-capped Robin	<i>Petroica goodenovii</i>	1	X
White-backed Swallow	<i>Cheramoeca leucosterna</i>		X
Welcome Swallow	<i>Hirundo neoxena</i>		X
Zebra Finch	<i>Taeniopygia guttata</i>	8	X
TOTAL		41	

Table 7. Species heard or seen, and banded at the Barton's Crossing.

Bob's Hole Tank Site

Results:

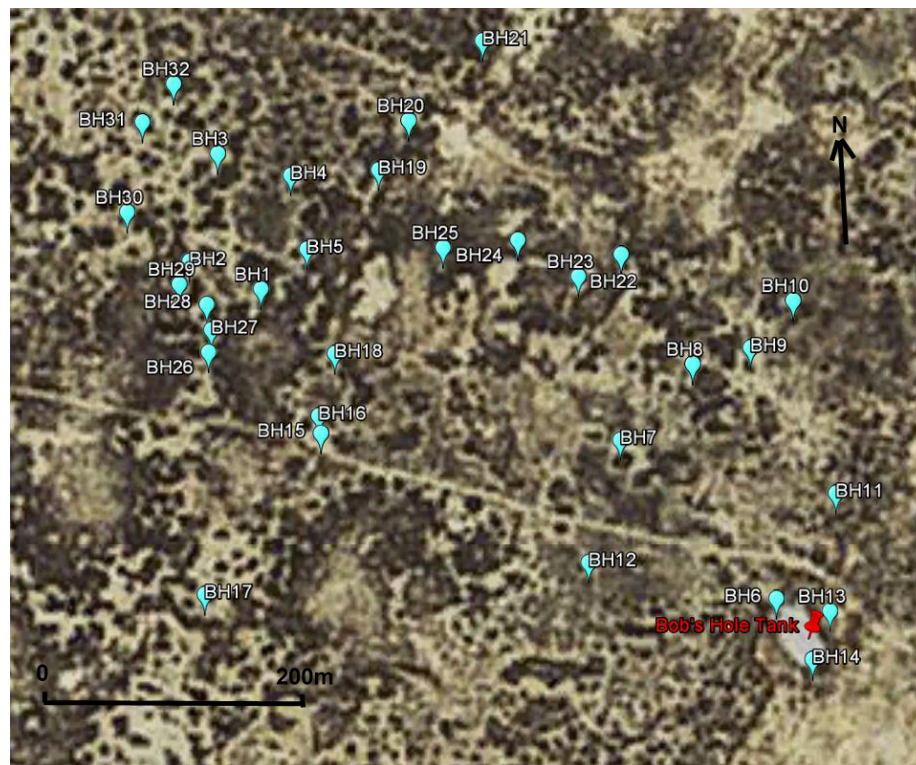


Figure 14. Satellite image showing positions of nets erected at the Bob's Hole Site. Image courtesy of Google Earth.

Bob's Hole Tank Site, situated within the channel where flood waters flow westwards from Barton's Crossing to Caryapundy Swamp, contains rather dense, large thickets of Lignum, in some cases over 2 m in height. The site was added to this survey due to Grey Grasswrens being seen and heard adjacent to the property management track between Barton's Crossing and Bullagree Tank. Nets were erected in the afternoon of 5 September with additional nets added on 6 September and removal of some nets on 7 September in preparation for transferring to the Two Mile Tank Site. The maximum number of nets erected was 32 which totaled 435 m.

Bob's Hole Tank Site			
	5.9.15	6.9.15	7.9.15
No of Nets	29	32	22
Total Length (m)	399	435	318
Time opened	1600	0730	0730
Time closed	1730	1230	1030
Time opened		1400	
Time closed		1700	
Hours open	1.5	8	3

Table 8. Banding effort at Bob's Hole Tank Site (5-7 September)

One Grey Grasswren was captured and banded at this site. In addition 7 other species were banded while a total of 28 species were either sighted or heard. The total captures at this site were 102 with Zebra Finches recording the most - 77. This high number of captures was as a consequence of setting nets up around Bob's Hole Tank. It was envisaged that Grey Grasswrens might be trapped while visiting the water to drink but this was not to eventuate as the one grasswren was caught at BH19 (Fig.14) - well away from the tank.

Bob's Hole Tank Site		5 – 7 . 9 . 15	
Species		No banded	Sighted/Heard
Pink-eared Duck	<i>Malacorhynchus membranaceus</i>		X
Hoary-headed Grebe	<i>Poliiocephalus poliocephalus</i>		X
Flock Bronzewing	<i>Phaps histrionica</i>		X
Crested Pigeon	<i>Ocyphaps lophotes</i>		X
Diamond Dove	<i>Geopelia cuneata</i>		X
Whistling Kite	<i>Haliastur sphenurus</i>		X
Wedge-tailed Eagle	<i>Aquila audax</i>		X
Cockatiel	<i>Nymphicus hollandicus</i>		X
Budgerigar	<i>Melopsittacus undulatus</i>		X
Blue-winged Parrot	<i>Neophema chrysostoma</i>		X
White-winged Fairy-wren	<i>Malurus leucopterus</i>	3	X
Variegated Fairy-wren	<i>Malurus lamberti</i>	7	X
Grey Grasswren	<i>Amytornis barbatus</i>	1	X
Redthroat	<i>Pyrrholaemus brunneus</i>	10	X
Pied Honeyeater	<i>Certhionyx variegatus</i>	1	X
Singing Honeyeater	<i>Lichenostomus virescens</i>		X
Orange Chat	<i>Epthianura aurifrons</i>	1	X
Chirruping Wedgebill	<i>Psophodes cristatus</i>		X
White-winged Triller	<i>Lalage sueurii</i>		X
Rufous Whistler	<i>Pachycephala rufiventris</i>		X
White-breasted Woodswallow	<i>Artamus leucorhynchus</i>		X
Australian Raven	<i>Corvus coronoides</i>		X
Little Raven	<i>Corvus mellori</i>		X
Red-capped Robin	<i>Petroica goodenovii</i>		X
Australian Reed-Warbler	<i>Acrocephalus australis</i>	2	X
White-backed Swallow	<i>Cheramoeca leucosterna</i>		X
Welcome Swallow	<i>Hirundo neoxena</i>		X
Zebra Finch	<i>Taeniopygia guttata</i>	77	X
TOTAL		102	

Table 9. Species heard or seen, and banded at the Bob's Hole Tank.

Bullagree Tank Site

Results:

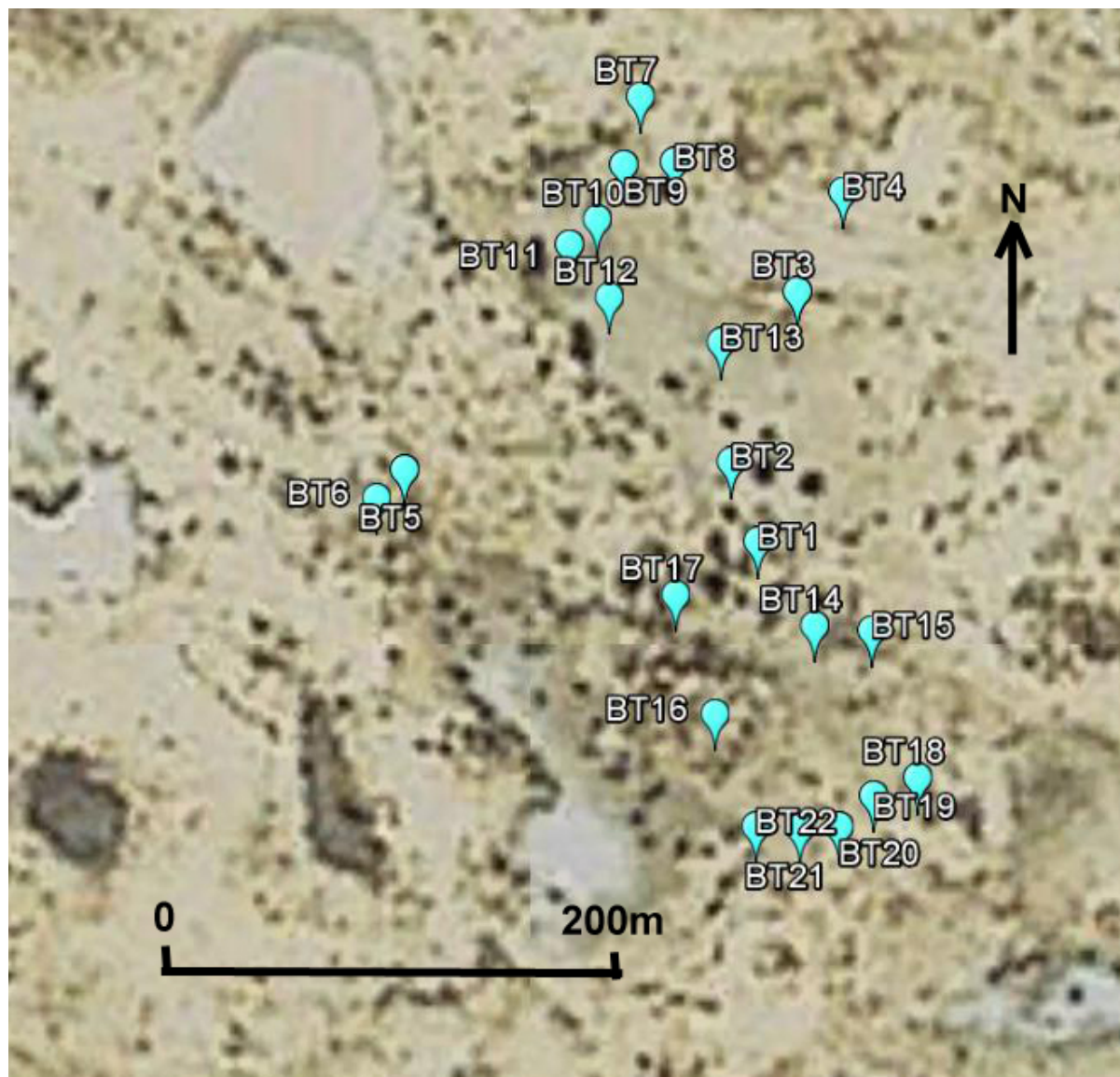


Figure 15. Satellite image showing positions of nets erected at the Bullagree Tank Site. Image courtesy of Google Earth.

As mentioned in our previous report, this site was incorporated into the present survey because Grey Grasswrens had been heard here in 2014 and in addition, during the current transect survey, several were sighted. The area is situated on the northern edge of the flood channel from Barton's Crossing into Caryapundy Swamp just north of Bullagree Tank. Much of the site features newly established Lignum growth along the minor channels and surrounding claypans. Most nets were erected across these channels with some placed within older Lignum thickets. Five nets were opened for 1.5 hours in the afternoon of 8 September with an additional 17 nets being erected and opened on 9 September, giving a total length of 312 m.

Bullagree Tank Site		
	8.9.15	9.9.15
No of Nets	5	22
Total Length (m)	72	312
Time opened	1600	0730
Time closed	1730	1500
Hours open	1.5	7.5

Table 10. Banding effort at Bullagree Tank Site (8-9 September)

Five Grey Grasswrens were banded. One bird banded on the first day was retrapped on the second day some 300 metres from its original capture and release site. Six other species were trapped with a total of 28 individuals being banded.

Bullagree Tank Site		8 – 9 . 9 . 15	
Species		No banded	Sighted/Heard
Flock Bronzewing	<i>Phaps histrionica</i>		X
Crested Pigeon	<i>Ocyphaps lophotes</i>		X
Whistling Kite	<i>Haliastur sphenurus</i>		X
Little Eagle	<i>Hieraaetus morphnoides</i>		X
Budgerigar	<i>Melopsittacus undulatus</i>		X
Blue-winged Parrot	<i>Neophema chrysostoma</i>		X
Horsfield's Bronze-Cuckoo	<i>Chalcites basalys</i>		X
White-winged Fairy-wren	<i>Malurus leucopterus</i>	13	X
Variegated Fairy-wren	<i>Malurus lamberti</i>	4	X
Grey Grasswren	<i>Amytornis barbatus</i>	5	X
Redthroat	<i>Pyrrholaemus brunneus</i>	1	X
Crimson Chat	<i>Epthianura tricolor</i>	1	X
Orange Chat	<i>Epthianura aurifrons</i>	3	X
Chirruping Wedgebill	<i>Psophodes cristatus</i>		X
Australian Raven	<i>Corvus coronoides</i>		X
Little Raven	<i>Corvus mellori</i>		X
Zebra Finch	<i>Taeniopygia guttata</i>	1	X
TOTAL		28	

Table 11. Species heard or seen, and banded at the Bullagree Tank.

AVIAN TRANSECTS

Results:

Transect 1

Along property management track from near cattle loading yard to Two Mile Tank.

Start

29° 02.463' S
142° 36.856' E
1540ES

Finish

29° 02.045' S
142° 37.400' E
1615ES

Time

Birds Recorded

Variegated Fairy-wren (x3)
Crimson Chat (x4)
Redthroat (x2)
Black Honeyeater (x2)
Blue-winged Parrot (x2)
White-winged Triller
Singing Honeyeater

Transect 2

Within flood channel containing young Lignum north of Bullagree Tank (within the new banding site).

Start

29° 04.093' S
142° 34.794' E
0945ES

Finish

29° 04.194' S
142° 34.912' E
1000ES

Time

Birds Recorded

White-winged Fairy-wren (x3)
Budgerigar (x12)
Grey Grasswren (x4)
Zebra Finch (x4)

Transect 3

Along management track across the westerly flowing flood channel south of Bullagree Tank

Start

29° 05.806' S
142° 34.783' E
0840ES

Finish

29° 05.486' S
142° 34.688' E
0905ES

Time

Birds Recorded

White-winged Fairy-wren (x13)
Zebra Finch (x38) (several active nests within the base of the Wedge-tailed Eagle nest)
Redthroat
Orange Chat (x2)
Budgerigar (x7)
Variegated Fairy-wren (x2)
Pied Honeyeater
Wedge-tailed Eagle (x2) at active nest

Transect 4	Start	Finish
Along the westerly flowing main channel from Barton's Crossing towards Bullagree Tank.	29° 05.201' S 142° 36.579' E	29° 05.152' S 142° 36.305' E
Time	1650ES	1710ES
Birds Recorded		
Variegated Fairy-wren (x5)		
Zebra Finch		
Blue-winged Parrot (x8)		
White-winged Fairy-wren		
Black-fronted Dotterel		

SUMMARY

Grey Grasswrens were heard, observed and/or captured at all five banding locations, but none were captured at any of the three locations where banding activities had been carried out in 2014 and where effort was concentrated during the early days of the 2015 survey.

The species was only heard or observed at one of the established avian transects – transect 2 where they had been heard in 2014. This area was established as a fourth banding site late in this survey period and five grasswrens were subsequently captured. This and nearby areas of relatively open, rather than dense Lignum stands appeared to have benefitted from local rains. The ground between Lignum clumps was covered with herbage which probably benefitted invertebrates which form an important part of grasswrens' diet. These types of areas warrant closer investigation during future surveys.

Only one short movement at Bullagree Tank Site was recorded during this survey. No movements have been recorded between any of the established banding sites since 2000 when banding was first commenced at *Narriearra* - this is an area for future study. At present there are not enough data to establish any population structures. The morphometrics of the six Grey Grasswrens captured during this survey are recorded in Appendix 2.

As a follow up on one of the recommendations contained in the 2014 Survey Report to OEH the whole of the northern boundary (along the dog fence with the permission of the Wild Dog Destruction Board) and the western boundary of *Narriearra* south from the dog fence to the vicinity of Karengappa Tank was traversed. We formed the opinion that no suitable habitat exists for Grey Grasswrens along or in the vicinity of either the northern or western boundaries.

Similarly, the small remaining remnants of canegrass and Lignum observable from along the property management track passing by Karengappa Tank, Karramarra Bore, Wally's, Limestone, Festival, Tractor Hill and Milpena tanks appeared to be heavily grazed and no grasswrens were observed or heard in any of the potential marginal habitat that we stopped to examine.

Also during this survey, it was noted that a fence maintenance track had been graded along the eastern boundary of *Narriearra* from Tester's Tank to the northern boundary dog fence. This made it possible to traverse, for the first time, about 20 kilometres of the boundary between *Narriearra* and *Delalah Downs* to examine the habitat in the channel that splits from

the main flood channel near Two Mile Tank to flow south-east and cross the boundary east of Barton's Tank (see Figure 6). This channel only flows during major flood events as an overflow bypassing Barton's Crossing and Caryapundy Swamp to flow through *Delalah Downs* before joining the Caryapundy Swamp overflow in the south-eastern corner of Narriearra and then flowing through *Pindera Downs* into the Bulloo River Overflow. No grasswrens were observed in what appears to be suitable habitat adjoining this track, but the area warrants further examination in the future.

All birds sighted within *Narriearra Station* are listed in Appendix 1.

RECOMMENDATIONS

1. Continuation of the biennial monitoring program utilising the protocols established in 2014 and duplicated in 2015 to monitor the distribution of Grey Grasswrens, the health of the remaining habitat and the effects of grazing on *Narriearra*.
2. Future banding surveys be concentrated in more open Lignum that is interspersed with diverse ground herbage in the vicinity of Barton's Crossing, Bullagree and Bob's Hole tanks.
3. Potential Grey Grasswren habitat along the eastern boundary of *Narriearra* north of Tester's Tank be thoroughly surveyed for the presence/absence of grasswrens. If a sizeable population is located in this area, both vegetation and avian survey transects and possibly a new banding locality be established.

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Appendix 1

NARRIEARRA STATION BIRD CHECKLIST 2015

Common Name	Scientific Name	Common Name	Scientific Name
Emu	<i>Dromaius novaehollandiae</i>	White-winged Fairy-wren	<i>Malurus leucopterus</i>
Pink-eared Duck	<i>Malacorhynchus membranaceus</i>	Variegated Fairy-wren	<i>Malurus lamberti</i>
Australasian Shoveler	<i>Anas rhynchotis</i>	Grey Grasswren	<i>Amytornis barbatus</i>
Grey Teal	<i>Anas gracilis</i>	Redthroat	<i>Pyrholaemus brunneus</i>
Pacific Black Duck	<i>Anas superciliosa</i>	Weebill	<i>Smicrornis brevirostris</i>
Hardhead	<i>Aythya australis</i>	Pied Honeyeater	<i>Certhionyx variegatus</i>
Australasian Grebe	<i>Tachybaptus novaehollandiae</i>	Singing Honeyeater	<i>Lichenostomus virescens</i>
Hoary-headed Grebe	<i>Polioccephalus poliocephalus</i>	White-plumed Honeyeater	<i>Lichenostomus penicillatus</i>
Flock Bronzewing	<i>Phaps histrionica</i>	White-fronted Honeyeater	<i>Purnella albifrons</i>
Crested Pigeon	<i>Ocyphaps lophotes</i>	Yellow-throated Miner	<i>Manorina flavigula</i>
Diamond Dove	<i>Geopelia cuneata</i>	Spiny-cheeked Honeyeater	<i>Acanthagenys rufogularis</i>
Peaceful Dove	<i>Geopelia striata</i>	Crimson Chat	<i>Epthianura tricolor</i>
Great Cormorant	<i>Phalacrocorax carbo</i>	Orange Chat	<i>Epthianura aurifrons</i>
Little Black Cormorant	<i>Phalacrocorax sulcirostris</i>	White-fronted Chat	<i>Epthianura albifrons</i>
Whistling Kite	<i>Haliastur sphenurus</i>	Black Honeyeater	<i>Sugomel niger</i>
Black Kite	<i>Milvus migrans</i>	Chestnut-crowned Babbler	<i>Pomatostomus ruficeps</i>
Wedge-tailed Eagle	<i>Aquila audax</i>	Chirruping Wedgebill	<i>Psophodes cristatus</i>
Little Eagle	<i>Hieraaetus morphnoides</i>	White-winged Triller	<i>Lalage sueurii</i>
Nankeen Kestrel	<i>Falco cenchroides</i>	Rufous Whistler	<i>Pachycephala rufiventris</i>
Australian Hobby	<i>Falco longipennis</i>	White-breasted Woodswallow	<i>Artamus leucorhynchus</i>
Brown Falcon	<i>Falco berigora</i>	Masked Woodswallow	<i>Artamus personatus</i>
Brolga	<i>Grus rubicunda</i>	White-browed Woodswallow	<i>Artamus superciliosus</i>
Eurasian Coot	<i>Fulica atra</i>	Black-faced Woodswallow	<i>Artamus cinereus</i>
Australian Bustard	<i>Ardeotis australis</i>	Australian Magpie	<i>Cracticus tibicen</i>
Black-winged Stilt	<i>Himantopus himantopus</i>	Willie Wagtail	<i>Rhipidura leucophrys</i>
Black-fronted Dotterel	<i>Elsyornis melanops</i>	Australian Raven	<i>Corvus coronoides</i>
Red-kneed Dotterel	<i>Erythronyx cinctus</i>	Little Raven	<i>Corvus mellori</i>
Banded Lapwing	<i>Vanellus tricolor</i>	Little Crow	<i>Corvus bennetti</i>
Australian Pratincole	<i>Stiltia isabella</i>	Restless Flycatcher	<i>Myiagra inquieta</i>
Caspian Tern	<i>Hydroprogne caspia</i>	Magpie-lark	<i>Grallina cyanoleuca</i>
Major Mitchell's Cockatoo	<i>Lophochroa leadbeateri</i>	Red-capped Robin	<i>Petroica goodenovii</i>
Galah	<i>Eolophus roseicapillus</i>	Australian Reed-Warbler	<i>Acrocephalus australis</i>
Little Corella	<i>Cacatua sanguinea</i>	White-backed Swallow	<i>Cheramoeca leucosterna</i>
Cockatiel	<i>Nymphicus hollandicus</i>	Welcome Swallow	<i>Hirundo neoxena</i>
Budgerigar	<i>Melopsittacus undulatus</i>	Fairy Martin	<i>Petrochelidon ariel</i>
Blue-winged Parrot	<i>Neophema chrysostoma</i>	Zebra Finch	<i>Taeniopygia guttata</i>
Horsfield's Bronze-Cuckoo	<i>Chalcites basal</i>	Australasian Pipit	<i>Anthus novaeseelandiae</i>
Red-backed Kingfisher	<i>Todiramphus pyrrhopygius</i>		

Appendix 2 – Morphometrics of Grey Grasswrens captured during the 2015 survey.

Age	Sex	Weight (g)	Head/Bill (mm)	Wing Length (mm)	Tail Length (mm)	Comments
1+	M	18.0	32.4	58	91	
2+	F	18.5	30.7	56	89	brood patch*
2+	M	23.0	33.0	63	101	
2+	F	19.5	31.2	60	110	brood patch
2+	M	18.0	31.3	59	101	
1	U	19.5	31.5	61	93	

* This bird was retrapped the following day approximately 300 metres from its original capture and release site.