

# Kowari Survey Clifton Hills and Pandie Pandie Station, December 2007

Reece Pedler - Community Fauna Recovery Officer SA Arid Lands NRM Board

Fieldwork conducted by Reece Pedler and John Read



**Government of South Australia**  
South Australian Arid Lands Natural  
Resources Management Board



**Australian Government**

## List of Figures

**Figure 1.** Location of trapping sites (red dots), showing the Walker’s Crossing (WAL) Grid on Clifton Hills Station and the and Blue Motor Car Dam area on Pandie Pandie Station (near Horseshoe Crossing).....3

**Figure 2.** a) and b) Sub-adult female Kowari captured on Pandie Pandie Station, south of Blue Motor Car Dam. ....7

**Figure 3.** Female Kultarr, showing five small joeys attached to nipples in the pouch.....7

**Figure 4.** An active *Notomys cervinus* ‘pophole’.....8

**Figure 5.** Sand mound habitat at the Walker’s Crossing trapping grid, Clifton Hills. Most mounds showed good growth of grasses and other vegetation from rainfall around 3 weeks prior, including Mitchell Grass (*Astrebla sp.*). ....8

## List of Tables

**Table 1.** Summary of all Elliot captures, showing species captured and trap success. ....5

**Table 2.** Details of Kowaris captured at both sites. ....5

**Table 3.** Summary of species observed during spotlighting.....6

## 1 Introduction

During August 2007, surveys were conducted in search of kowaris across several properties on the upper Birdsville Track area by Peter Canty and Robert Brandle on behalf of SA ALNRM. Areas within previously known Kowari distribution were targeted, including appropriate gibber habitat on Mulka, Mungerannie, Pandie Pandie, Cordillo Downs and Innamincka Stations. Trapping was carried out at six locations over 12 nights with at an approximate intensity of 400 trap-nights per sample. Despite the widespread nature and intensity of this trapping session, not a single Kowari was captured and no fresh signs were observed despite other small mammals and prey items being recorded. Clifton Hills Station, which has been the site of a great deal of work on Kowari over many years was unfortunately not accessible at the time of the survey. Two areas on Clifton hills have permanent monitoring grids, each consisting of 200 trap sites to compare between high and low grazing intensities.

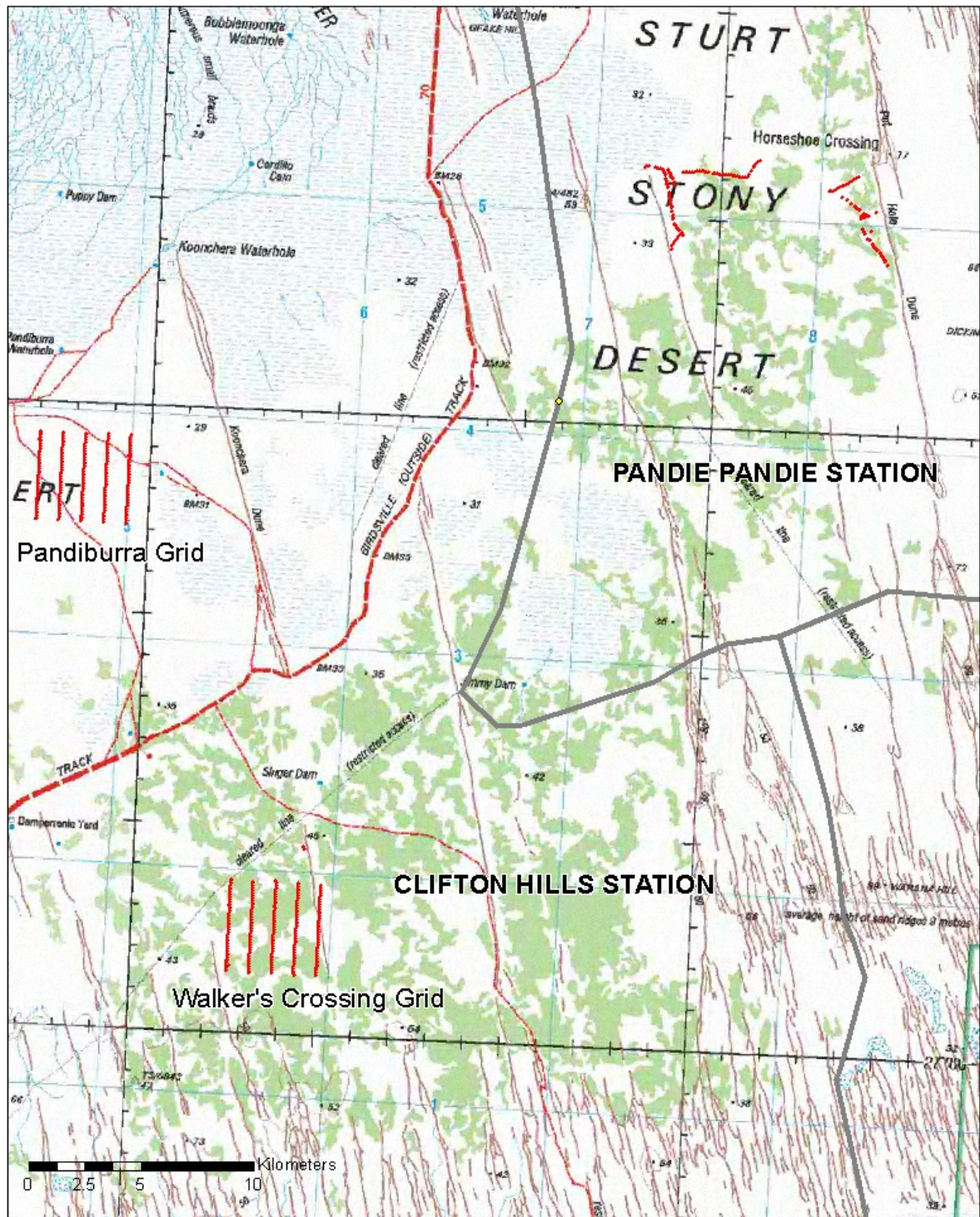
Given the concerning lack of Kowaris encountered in other parts of their known range, the need to visit Clifton Hills was deemed particularly crucial and access was organised for a limited survey at the monitoring grid sites. The aim of the survey was to detect evidence of Kowari in the area. For this purpose, the monitoring grid considered to be the best Kowari habitat with lowest grazing intensity (Walker's Crossing or WAL grid) was chosen and areas where kowari had been trapped before were targeted. An adjacent area on Pandie Pandie Station (~40 km to NE) was also visited. This was the site of an spotlighting sighting of a Kowari by Arian Wallach and Adam O'Neil (who were conducting dingo research in the area) in late July/early August 2007.

## 2 Methods

Trapping effort was targeted in areas deemed most likely to yield captures. Given the warm weather conditions at the time of the survey, traps were also placed in a manner that made checking them achievable in a short space of time to avoid problems with trapped animals overheating.

Trapping was conducted over 2 nights at Walker's Crossing Grid on Clifton Hills (with a total of 330 trap-nights). Traps were placed at each trap site (100 m spacings) on the four western-most lines of the grid (1 per site, unlike during previous trapping sessions comparing between WAL and PAN grids) and some areas of suitable habitat within the grid area were also targeted with additional traps. Several of the track monitoring sites at WAL grid were also prepared by powdering up the soil and placing a rock covered in tuna oil in the centre. In the Blue Motor Car Dam area on Pandie Pandie Station, 120 traps were set on the first night, with an additional 50 set the following night (total 290 trap nights). Traps were placed at 100m intervals in lines through suitable sand mound habitat. Two different types of bait were used. Around half of traps were baited with a rolled oats and peanut paste mixture, while the other half were baited with a mixture of cat biscuits soaked in tuna oil. Captured animals were marked with black texta on the base of their tail.

Spotlighting was conducted from a vehicle at both sites for several hours each night. An effort was made to catch most mammals observed in the spotlight in order to check sex, breeding condition etc. Sand mound condition assessments were conducted at several sites, following the methods developed by Brandle and Canty. Track surveys were also carried out at several locations in sand dune habitat, following the 2 ha sand spoor plot methodology developed by Southgate *et al*, 2005.



**Figure 1.** Location of trapping sites (red dots), showing the Walker's Crossing (WAL) Grid on Clifton Hills Station and the and Blue Motor Car Dam area on Pandie Pandie Station (near Horseshoe Crossing).

### 3 Results and Discussion

A total of seven Kowaris were captured, including four at the Walker's Crossing grid on Clifton Hills and a further three animals in the area around Blue Motor Car Dam on Pandie Pandie Station. All four Kowaris captured at the WAL Grid were females, while two males and a female were caught on Pandie Pandie (Table 1). All animals were relatively small (range 46 - 77g) and all females caught had barely visible pouches showing no signs of previous breeding. All animals caught appeared to be young animals, indicating that breeding had occurred recently (Table 2). The number of Kowaris trapped was encouraging, given the lack of animals detected earlier in the year in other nearby areas. Trap success was high at both trapping sites and although trapping did not follow the same methods as previous monitoring, trap success levels were comparable to those recorded during previous trapping at the WAL grid (Brandle et al, unpublished, 2004).

Differences in habitat characteristics between the Clifton Hills and Pandie Pandie sites were noted, with substantially fewer sand mounds in the area around Blue Motor Car Dam than at the WAL grid. Sand spreads or depleted sand mounds were more common at the Pandie Pandie site, however some mounds in good condition were noted in the area and most were generally much higher and larger in diameter than those at WAL grid, with substantial perennial vegetation growing on them. Habitat conditions at the time of trapping appeared to be favourable, with around 15 mm of rain in the area about three weeks prior resulting in a flush of growth of grasses and herbage on sand mounds.

From aerial images, appropriate kowari habitat appears to be continuous between the two trapping sites, and Kowari have been captured throughout this area previously (Brandle et al, unpublished, 2004). Confirmation that Kowari are still present in the area suggests that they are also likely to remain in other areas of appropriate habitat on Clifton Hills and the south-eastern areas of Pandie Pandie Station. More extensive follow-up trapping during cooler conditions is required to determine if this is the case. Repeating a full trapping session at the two monitoring grids on Clifton Hills (using the methods previously used at those sites) will also be important in determining the status of the species in the area.

A range of other species were also captured in Elliot traps and through spotlighting at both sites including Kultarr (*Antechinomys laniger*), Fawn Hopping Mouse (*Notomys cervinus*) and Plague Rat (*Rattus villisimus*) (Table 2). Interestingly, the vast majority of Kultarr trapped were female (22 out of the 27 examined from both sites) and nearly all had either pouch young or showed signs of recent breeding (Appendix). This high ratio of females and the large number of those exhibiting signs of breeding may suggest a male senescence event. Male senescence has been recorded in a range of dasyurid marsupials but possibly not in Kultarr.

Track surveys conducted in dune habitats at both trapping areas revealed very low numbers of rabbits. Rabbit tracks were detected at only two of the five plots surveyed and in both cases only one set of tracks was observed. In addition, no evidence of cats or foxes was found at any of the track survey sites on Clifton Hills or Pandie Pandie, but tracks of dingos were reasonably abundant. Several dingos were observed at the Pandie Pandie site, where 2 or 3 animals were seen singly as well as a group of 4 individuals. Discussions with Peter Morton from Pandie Pandie Station revealed that from his observations, rabbit numbers had remained low since Rabbit Calicivirus Disease (RCD) moved through the area in the late 1990's. The reason for the lack of re-establishment and continued low numbers is of particular interest, as this trend of continued low rabbit numbers has not been the case in many other areas.

**Table 1.** Summary of all Elliot captures, showing species captured and trap success.

| Date     | Site/Area                         | No. Traps set | Trap success (%)<br>(Kowari only) | Total Trap success (%)<br>(all mammal species) | Kowari<br>( <i>Dasyercus byrnei</i> ) | Kultarr<br>( <i>Antechinomys laniger</i> ) | Fawn Hopping Mouse<br>( <i>Notomys cervinus</i> ) | Stripe-faced Dunnart<br>( <i>Sminthopsis macroura</i> ) | Plague Rat<br>( <i>Rattus villosissimus</i> ) |
|----------|-----------------------------------|---------------|-----------------------------------|--|---------------------------------------|--|---|---|---|
| 11/12/07 | WAL Grid, Clifton Hills           | 160           | 0.62                              | 5.00   | 1                                     | 5  |   | 2   |   |
| 12/12/07 | WAL Grid, Clifton Hills           | 170           | 1.17                              | 9.41   | 3                                     | 13   | 1   |   |   |
| 13/12/07 | Blue Motor Car Dam, Pandie Pandie | 120           | 0.83                              | 6.66   | 1                                     | 5  | 2   |   |   |
| 14/12/07 | Blue Motor Car Dam, Pandie Pandie | 170           | 1.17                              | 7.06   | 2                                     | 4  | 4   |   | 2   |

**Table 2.** Details of Kowaris captured at both sites.

| Date       | Site               | Sex | Age       | Breeding Condition | Weight (g) | PES (mm) | Wpt/Grid No. | Bait                             | Comments  |
|------------|--------------------|-----|-----------|--------------------|------------|----------|--------------|----------------------------------|---|
| 11/12/2007 | WAL Grid           | F   | Sub-adult | Pouch not visible  | 77         | 36       | WE12         | Fish oil & dog biscuits          |   |
| 12/12/2007 | WAL Grid           | F   | Sub-adult | Pouch not visible  | 71         | 32       | WC10         | Oats/Peanut Paste                |   |
| 12/12/2007 | WAL Grid           | F   | Sub-adult | Pouch not visible  | 59         | 33.7     | WD31         | Oats/Peanut Paste                | Ran down dragon burrow on release   |
| 12/12/2007 | WAL Grid           | F   | Sub-adult | Pouch not visible  | 61         |          | WD04         | Oats/Peanut Paste                | Tick attached to end of ear. Ran down dragon burrow on release.               |
| 13/12/2007 | Blue Motor Car Dam | F   | Sub-adult | Pouch not visible  | 46         | 34.6     | 198          | Oats/Peanut Paste & dog biscuits | Ran into small dragon hole, ~8m from trap in small sand mound ~0.5 m diameter |
| 14/12/2008 | Blue Motor Car Dam | M   | Sub-adult |                    | 55         | 34.4     | 168          | Oats/Peanut Paste & dog biscuits | Ran to burrow ~200m to NW   |
| 14/12/2008 | Blue Motor Car Dam | M   | Sub-adult |                    | 70         | 38.3     | 218          | Oats/Peanut Paste & dog biscuits |   |

**Table 3.** Summary of species observed during spotlighting

| Site                                   | Date             | Species  |
|--|------------------|--|
| WAL Grid, Clifton Hills                | 10 & 11 Dec 2007 | <i>Antechinomys laniger</i><br><i>Notomys cervinus</i><br><i>Pseudomys hermannsburgensis</i><br><i>Pogona vitticeps</i><br><i>Diplodactylus byrnei</i> |
| Blue Motor Car Dam area, Pandie Pandie | 12 & 13 Dec 2007 | <i>Antechinomys laniger</i><br><i>Notomys cervinus</i><br><i>Canis lupus dingo</i>   |



a)



b)

**Figure 2.** a) and b) Sub-adult female Kowari captured on Pandie Pandie Station, south of Blue Motor Car Dam.



**Figure 3.** Female Kultarr, showing five small joeys attached to nipples in the pouch.



**Figure 4.** An active *Notomys cervinus* 'pophole'.



**Figure 5.** Sand mound habitat at the Walker's Crossing trapping grid, Clifton Hills. Most mounds showed good growth of grasses and other vegetation from rainfall around 3 weeks prior, including Mitchell Grass (*Astrebula* sp.).

#### 4 Appendix

| Species                     | Date       | Site               | Sex | Age       | Recap | Breeding Cond              | Weight (g) | PES (mm) | Wpt/Grid No. | Comments   |
|-----------------------------|------------|--------------------|-----|-----------|-------|----------------------------|------------|----------|--------------|--|
| <i>Antechiomys laniger</i>  | 11/12/2007 | WAL Grid           | F   | Adult     |       | Enlarged pouch and nipples |            |          | WB29         |  |
| <i>Antechiomys laniger</i>  | 11/12/2007 | WAL Grid           | F   |           |       |                            |            |          | WD05         |  |
| <i>Antechiomys laniger</i>  | 11/12/2007 | WAL Grid           | F   | Adult     |       | Pouch young                |            |          | WD07         |  |
| <i>Antechiomys laniger</i>  | 11/12/2007 | WAL Grid           | F   | Adult     |       | Nipples distended          |            |          | WD09         |  |
| <i>Antechiomys laniger</i>  | 11/12/2007 | WAL Grid           | F   | Adult     |       | Pouch young                |            |          | WD13         |  |
| <i>Dasyercus byrnei</i>     | 11/12/2007 | WAL Grid           | F   | Sub-Adult |       | Pouch not visible          | 77         | 36       | WE12         |  |
| <i>Sminthopsis macroura</i> | 11/12/2007 | WAL Grid           | F   | Adult     |       | Enlarged pouch and nipples |            |          | WB02         | Run-on patch   |
| <i>Antechiomys laniger</i>  | 12/12/2007 | WAL Grid           | F   | Adult     |       | Nipples distended          |            |          | WB30         |  |
| <i>Antechiomys laniger</i>  | 12/12/2007 | WAL Grid           | F   | Adult     |       | Enlarged pouch and nipples |            |          | WB21         |  |
| <i>Antechiomys laniger</i>  | 12/12/2007 | WAL Grid           | F   | Adult     |       | Enlarged pouch and nipples |            |          | WB30         |  |
| <i>Antechiomys laniger</i>  | 12/12/2007 | WAL Grid           | M   | Adult     |       |                            |            |          | WB39         |  |
| <i>Antechiomys laniger</i>  | 12/12/2007 | WAL Grid           | F   | Adult     |       | Enlarged pouch and nipples |            |          | WC39         |  |
| <i>Antechiomys laniger</i>  | 12/12/2007 | WAL Grid           | F   | Adult     |       | Enlarged pouch and nipples |            |          | WC28         | Very groggy on release   |
| <i>Antechiomys laniger</i>  | 12/12/2007 | WAL Grid           | F   | Adult     |       | Enlarged pouch and nipples |            |          | WC--         |  |
| <i>Antechiomys laniger</i>  | 12/12/2007 | WAL Grid           | ?   | Adult     |       |                            |            |          | WC07         | escaped  |
| <i>Antechiomys laniger</i>  | 12/12/2007 | WAL Grid           | F   | Adult     |       | Enlarged pouch and nipples |            |          | WE10         |  |
| <i>Antechiomys laniger</i>  | 12/12/2007 | WAL Grid           | F   | Adult     |       | Enlarged pouch and nipples |            |          | WE11         |  |
| <i>Antechiomys laniger</i>  | 12/12/2007 | WAL Grid           | F   | Adult     |       | Pouch young                |            |          | WD15         |  |
| <i>Antechiomys laniger</i>  | 12/12/2007 | WAL Grid           | M   | Adult     |       |                            |            |          | WD09         |  |
| <i>Antechiomys laniger</i>  | 12/12/2007 | WAL Grid           | F   | Adult     | Y     | Enlarged pouch and nipples |            |          | WE12         |  |
| <i>Antechiomys laniger</i>  | 12/12/2007 | WAL Grid           | F   | Adult     |       | Pouch young                |            |          | WD08         |  |
| <i>Antechiomys laniger</i>  | 12/12/2007 | WAL Grid           | F   | Adult     |       | Nipples distended          |            |          | WD03         |  |
| <i>Dasyercus byrnei</i>     | 12/12/2007 | WAL Grid           | F   | Sub-Adult |       | Pouch not visible          | 71         | 32       | WC10         |  |
| <i>Dasyercus byrnei</i>     | 12/12/2007 | WAL Grid           | F   | Sub-Adult |       | Pouch not visible          | 59         | 34       | WD31         | Ran down dragon burrow on release  |
| <i>Dasyercus byrnei</i>     | 12/12/2007 | WAL Grid           | F   | Sub-Adult |       | Pouch not visible          | 61         |          | WD04         | tick attached to end of ear. Ran down dragon burrow on release.                                      |
| <i>Notomys cervinus</i>     | 12/12/2007 | WAL Grid           | ?   | Adult     |       |                            |            |          | WE03         | escaped  |
| <i>Sminthopsis macroura</i> | 12/12/2007 | WAL Grid           | M   | Sub-Adult |       |                            |            |          | WB01         |  |
| <i>Antechiomys laniger</i>  | 13/12/2007 | Blue Motor Car Dam | M   | Adult     |       |                            |            |          | 171          |  |
| <i>Antechiomys laniger</i>  | 13/12/2007 | Blue Motor Car Dam | m   | Adult     |       |                            |            |          | 170          |  |
| <i>Antechiomys laniger</i>  | 13/12/2007 | Blue Motor Car Dam | F   | Adult     |       | Enlarged pouch and nipples |            |          | 267          |  |
| <i>Antechiomys laniger</i>  | 13/12/2007 | Blue Motor Car Dam | F   | Adult     |       |                            |            |          | 254          |  |
| <i>Antechiomys laniger</i>  | 13/12/2007 | Blue Motor Car Dam | M   | Juvenile  |       |                            |            |          | 307          |  |
| <i>Dasyercus byrnei</i>     | 13/12/2007 | Blue Motor Car Dam | F   | Sub-Adult |       | Pouch not visible          | 46         | 35       | 198          | Ran into small dragon hole, ~8m from trap in small sand mound ~0.5 m diameter. 54J 0.373937, 7049291 |
| <i>Notomys cervinus</i>     | 13/12/2007 | Blue Motor Car Dam | F   | Adult     |       |                            |            |          | 118          |  |
| <i>Notomys cervinus</i>     | 13/12/2007 | Blue Motor Car Dam | M   | Adult     |       |                            |            |          | 115          |  |
| <i>Antechiomys laniger</i>  | 14/12/2008 | Blue Motor Car Dam | ?   | Juvenile  |       |                            |            |          | 171          |  |
| <i>Antechiomys laniger</i>  | 14/12/2008 | Blue Motor Car Dam | F   | Adult     |       | Enlarged pouch and nipples |            |          | 268          |  |
| <i>Antechiomys laniger</i>  | 14/12/2008 | Blue Motor Car Dam | F   | Adult     |       | Pouch young (5)            |            |          | 264          |  |
| <i>Antechiomys laniger</i>  | 14/12/2008 | Blue Motor Car Dam | F   | Adult     |       | Enlarged pouch and nipples |            |          | 258          |  |
| <i>Dasyercus byrnei</i>     | 14/12/2008 | Blue Motor Car Dam | M   | Sub-Adult |       |                            | 55         | 34.4     | 168          | Ran to burrow ~200m to NW. 54J 0376794, 7052013  |
| <i>Dasyercus byrnei</i>     | 14/12/2008 | Blue Motor Car Dam | M   | Sub-Adult |       |                            | 70         | 38       | 218          | 54J 0373318, 7050970   |
| <i>Notomys cervinus</i>     | 14/12/2008 | Blue Motor Car Dam | M   | Adult     |       |                            |            |          | 189          | Ran to pophole ~100m to N  |
| <i>Notomys cervinus</i>     | 14/12/2008 | Blue Motor Car Dam | F   | Adult     |       |                            |            |          | 179          |  |
| <i>Notomys cervinus</i>     | 14/12/2008 | Blue Motor Car Dam | F   | Adult     |       |                            |            |          | 232          | Followed to pop-hole ~100m to E in sand spread   |
| <i>Notomys cervinus</i>     | 14/12/2008 | Blue Motor Car Dam | M   | Adult     |       | Testes scrotal             |            |          |              | throat pouch obs   |
| <i>Notomys cervinus</i>     | 14/12/2008 | Blue Motor Car Dam | M   | Adult     |       |                            |            |          |              |  |
| <i>Notomys cervinus</i>     | 14/12/2008 | Blue Motor Car Dam | M   | Adult     | Y     |                            |            |          |              |  |
| <i>Notomys cervinus</i>     | 14/12/2008 | Blue Motor Car Dam | M   | Adult     | Y     |                            |            |          |              | Ran to same 3 hole warren as yesterday   |
| <i>Notomys cervinus</i>     | 14/12/2008 | Blue Motor Car Dam | F   | Adult     |       |                            |            |          |              | Ran to single hole on E side of track  |
| <i>Rattus villosissimus</i> | 14/12/2008 | Blue Motor Car Dam | M   | Adult     |       |                            | 146        |          |              |  |
| <i>Rattus villosissimus</i> | 14/12/2008 | Blue Motor Car Dam | F   | Sub-Adult |       |                            | 82         |          |              |  |

