A Survey of Southern Marsupial Moles *Notoryctes typhlops* and Other Native Fauna in the Western Simpson Desert, South Australia.

A report prepared for the Rangelands Action Project and Friends of Simpson Desert.

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Introduction

Marsupial moles (*Notoryctes typhlops and N. caurinus)* are poorly understood marsupials that inhabit the sandy deserts of central Australia. The species are listed as Endangered under the *Environment Protection and Biodiversity Conservation Act 1999.* To date only *N. typhlops*, the Southern Marsupial Mole (known as *Itjaritjari* to Aboriginal people in the Anangu-Pitjantjatjara Lands) has been found in South Australia. It is listed as endangered under the *South Australian National Parks and Wildlife Act 1972 – Schedule 7* and *9*, amended September 2000. However, both the national and state listings of both species are far from certain since their subterranean habit, combined with their apparent rarity means that little is known of their ecology, distribution and abundance.

Their cryptic nature and rarity makes direct examination of the species almost impossible. However, recent studies in the Anangu-Pitjantjatjara Lands have shown that indirect methods can be used to investigate the distribution and abundance of the species (Benshemesh, 2004). This type of information is urgently needed to enable a reasonable assessment of the current distribution and conservation status of the species and to provide a benchmark for ongoing monitoring.

Indirect methods that can be used to assess the distribution of marsupial moles include searching for underground signs of mole activity and the collection and examination of predator scats (dingoes, foxes and cats). Underground signs can provide information about both the distribution and abundance of marsupial moles, while predator scats may contain marsupial mole remains and DNA and may therefore also provide information about which of the two species occurs in an area.

Prior to 2005, records of marsupial moles in South Australia had been restricted to the Anangu-Pitjantjatjara Lands, the Maralinga Lands and Yellabinna Regional Reserve. In 2005, a preliminary survey was undertaken to look for *N. typhlops* in the Simpson Desert in northern South Australia and south-west Queensland (Benshemesh, 2005). This survey revealed signs of marsupial moles at a number of sites in the Simpson Desert, but this sign was mainly restricted to the western half of the desert, gradually becoming less frequent and finally disappearing about 160 km east of Purni Bore. There was no sign of marsupial moles found in Simpson Desert in Queensland. The 2005 survey was conducted at sites located 15 km apart and therefore provided quite coarse information about the distribution and abundance of marsupial moles in this region.

In addition to looking for marsupial moles, this survey was also intended to provide additional information about the distribution and abundance of other wildlife species (including native and introduced species) in the area based on the presence of sign. Tracks were used as the primary measure of presence at a site, with scats in close proximity to burrows used as supportive sign.

The current survey in the Simpson Desert was undertaken between May 21st and June 2nd 2006. The aim of the survey was to (a) search for signs of marsupial moles along the Rig Road, thereby extending the southern limit of the surveyed area in the Simpson Desert;

(b) re-survey the western portion of the French Line (commencing at Purni Bore) to provide finer resolution information about the distribution of the marsupial moles in this part of the Simpson Desert; (c) search survey areas along the Rig Road and French Line for signs of other wildlife species; and (d) to provide the Friends of Simpson Desert group with training to enable them to independently utilize these passive survey techniques in the future.

Survey methods and Study Area.

Study area and sites

The Simpson Desert is the largest sand-ridge desert in the world, covering XXXXXX $km^{2.}$ The desert straddles the borders of South Australia, the Northern Territory and Queensland. A number of conservation reserves and national parks provide varying levels of protection to parts of the Simpson Desert. These include Witjira National Park, the Simpson Desert Regional Reserve and the Simpson Desert Conservation Park in South Australia.

A number of land-systems have been described within the Simpson Desert, however the dominant characteristic of the desert is the extensive parallel dunes. These dunes, which are typically separated by about half a kilometre are aligned in a NNW-SSE orientation and cover hundreds of kilometers. The Simpson Desert is the driest region in Australia, receiving an average rainfall of only 100-150 mm per year. This rainfall is also highly variable and the Simpson is affected by serious drought conditions almost one third of the time.

The current survey was undertaken between May 21st and June 2nd 2006. A series of nine survey sites, at 5 km intervals, were systematically located along the French Line, starting 1 km east of Purni Bore. Another series of 10 sites, also separated by 5 km were located along the Rig Road, between the intersection of the Rig Road and French Line and Lynne's Junction. Each site represents one sand dune (nineteen were sampled in total) and each site was located within 150 m of the main vehicle track.

At each site a series of three trenches were dug: one to sample the crest, mid-slope and base of the western side of the dune. The upper trench was located within 20 m of the dune crest, while the lowest trench was located where the slope became small or the vegetation changed. Mid-slope trenches were subsequently located one third to half-way between the crest and base trench (Plate 1). Trenches were located on the western side of the dune to maximize exposure to the sun. The precise location of each trench was primarily influenced by the vegetation at the site. Trenches were not located next to trees or shrubs, so as to avoid damaging the vegetation and to minimise the number of large roots encountered and damaged in the trenches.

This arrangement of three trenches at each site provided information on (1) the distribution of marsupial moles at a similar latitude across the Simpson Desert; and (2) what part of the sand dune marsupial moles are most likely to be found in.

Plate 1. Groups of Friends of Simpson Desert members digging trenches on the crest (foreground), mid-slope and lower slope of a dune.

Survey Methods

Trenches

Each trench was dug to be about 100 cm long by 80 cm deep and 30 cm wide (Plate 2). The long axis of each trench was aligned approximately east-west to maximise the exposure of the northern trench wall to sunshine. Only the northern trench wall was inspected for mole signs so this wall was carefully rubbed smooth to provide a smooth and flat surface. The top of the opposite wall was dug out to maximise the portion of the northern trench wall exposed to the sun. A large branch was positioned in each trench to provide an escape route for any small animals that may have fallen into the trenches.

Plate 2. Trenches are dug to be about 100 cm long, 80 cm deep and 30 cm wide.

Moleholes

Each site was visited twice, once to excavate the trenches and the second to inspect the northern trench wall for signs of marsupial moles. The signs being targeted are small round marks that remain after marsupial moles have moved through an area. The signs are actually the back-filled tunnels used by marsupial moles (henceforth referred to as moleholes) (Plate 3).

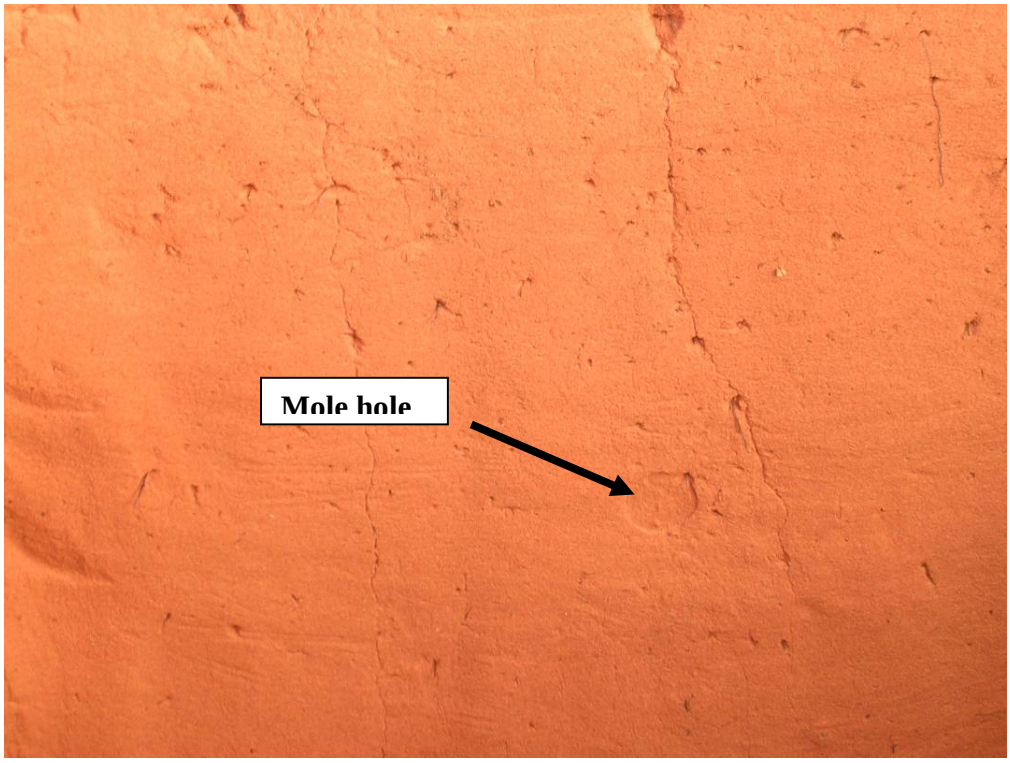


Plate 3. A molehole, the back-filled tunnel left behind after a marsupial mole has moved through an area.

To detect moleholes during the final readings of the trenches, the north facing trench wall was again rubbed smooth and flat and handfuls of dry sand were gently thrown onto the wall. This process gently erodes the surface, particularly the backfilled passage of the molehole leaving the edges of the moleholes more obvious to the observer. Previous work using this method has shown that the number moleholes revealed using this method often increases for several days as the walls of the trench are dried by the sun, eventually levelling off. The number of days for this plateau to be reached is dependent on the moisture content of the soil and the ambient conditions. During this survey, final readings were taken a maximum of four days after the trenches were dug, however most were read 2-3 days after digging. Conditions during this time were fine, with maximum daytime temperatures between 20 and 25 degrees and night time temperatures reaching as low as -6 degrees. No rain was recorded during the surveys.

During the inspection of the trenches, all oval and symmetrical sand-filled structures with a minimum diameter of 25 m were measured in regard to their depth from the surface and their diameter (Plate 4). In addition, each was scored from low (1) to high (3) in regard to its clarity, how confident the observer was that the structure was from a marsupial mole, and how loose the backfilled sand was in comparison to that outside the tunnel. The structures were also rated for how fresh they appeared with scores ranging from 1 (very old) to 5 (fresh, with free-flowing sand in the tunnel).

Plate 4. Ian Jackson, Friends of Simpson member, takes measurements of a mole hole.

Additional data

At each site the surrounding vegetation was noted. From each of the trenches that contained moleholes, we collected soil samples from 10 cm, 25 cm and 50 cm below the surface. These samples were collected to provide information on chemical composition and soil particle size, but have not yet been analysed. The presence of other animals, including reptiles, mammals and birds were recorded during visual surveys and searches for tracks, scats and burrows.

Track surveys
A visual search of a 100m x 200m plot for a period of 25-30 minutes was conducted to determine the occurrence of native and introduced mammals including mulgara *Dasycercus cristicauda*, ampurta *Dasycercus hillieri*, hopping mice *Notomys spp*., dunnarts *Sminthopsis* spp., marsupial mole *Notoryctes typhlops,* dingo *Canis lupis dingo* cat *Felis cattus,* fox *Vulpes vulpes,* camel *Dromaius novahollandiae* and cattle *Bos taurus*. The identity of an animal was assigned on the basis of gait pattern and foot imprint size, with a minimum of three consecutive gait imprints required for identification. Tracks can not be used to reliably distinguish between members of many genera including Dasycercus, Sminthopsis and Notomys, so complimentary trapping using Elliott traps was done to assist in the identification of tracks belonging to animals of these three genera. A species was recorded as present at a site if its tracks were recorded there. Additional notes were taken to indicate if one or many tracks were identified to give an indication of the level of activity of a species at a site.

Opportunistic trapping and other observations
At each camp site, we set up to 60 Elliott traps (small aluminium box traps) to investigate what small mammals were in the area. Where a camp was used for more than one day we also set up funnel traps to try to sample the reptile fauna as well (Plate 5). All animals captured using these methods were identified, weighed and their sex recorded (except for reptiles as sex can be difficult to determine for many species). We also recorded all birds observed during the survey. Records of all species trapped, observed or heard during the surveys will be entered into the Department of Environment and Heritage database.

Results

Trenches
Marsupial moles were recorded at nine of the 19 sites along the French Line and Rig Rd. The majority of sites with marsupial mole sign were along the Rig Road (six of the nine sites) (Figure 1). Of the 57 trenches that were dug during this survey, only nine had sign of marsupial mole. Multiple mole holes were recorded in three trenches, with one trench having four mole holes. In previous surveys in the western Simpson Desert, more marsupial mole sign has been found in trenches on the dune crest. During this survey, four of the nine trenches with mole holes were located on the dune crest (Figure 2). The density of mole holes per vertical m^2 was also greatest in the trenches located on the dune crest (Figure 3).

Plate 5. Friends of Simpson group members stand around a funnel trap (top) and remove an animal from an Elliott trap (below).

Figure 1. Location of trench sites from the Friends of Simpson 2006 survey, and the 2005 survey by Joe Benshemesh.

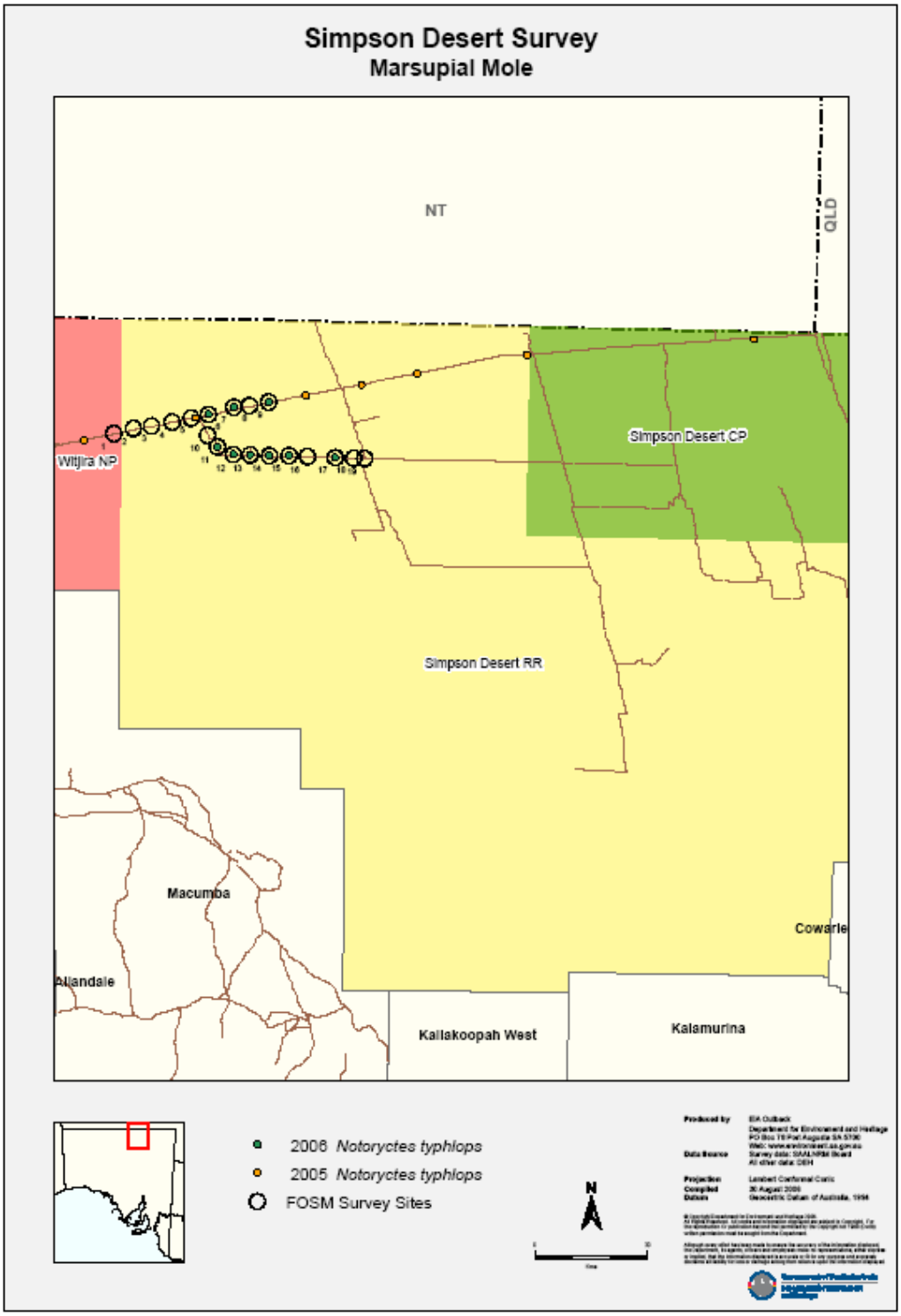


Figure 2. The proportion of trenches with moleholes, in relation to position on dune.

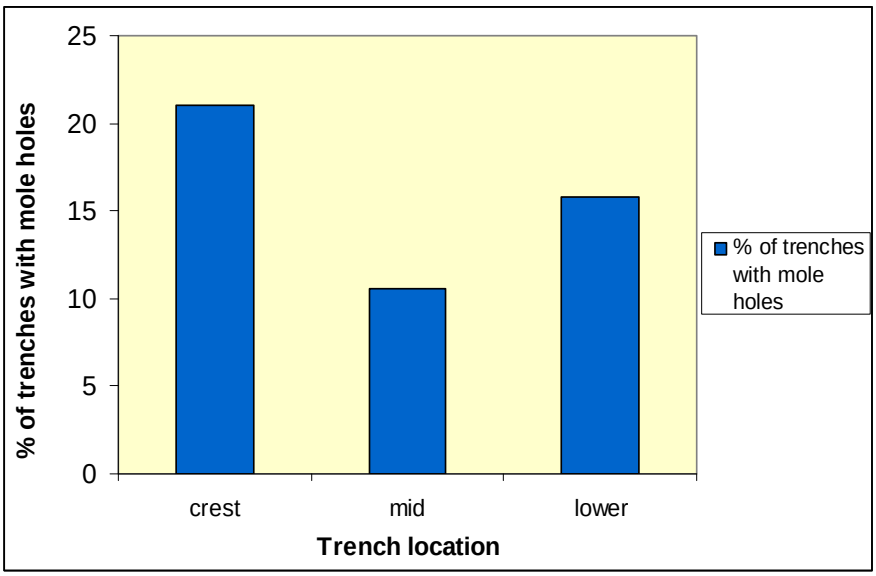


Figure 3. The average density of moleholes per vertical metre^2 in trenches relative to position of trench on dune. (Error bars are standard error).

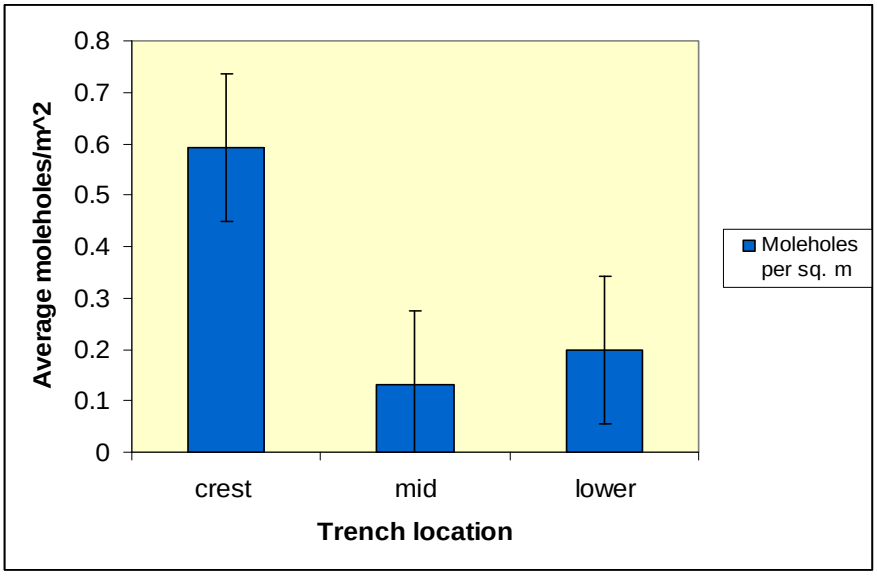
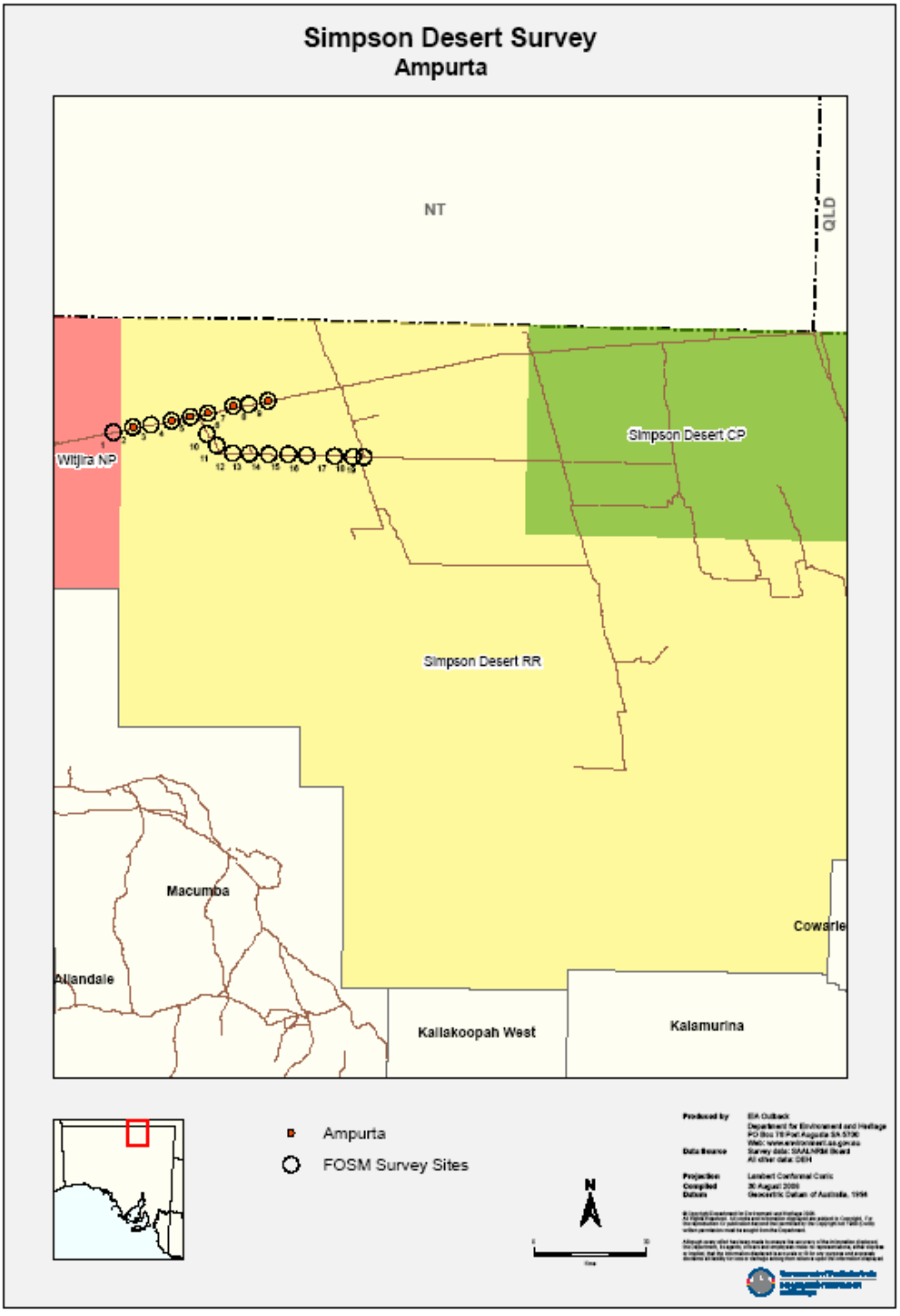


Figure 4. Location of survey sites where ampurta *Dasycercus hillieri* tracks were recorded.



Track surveys

Native species

Dasycercus sign was recorded on all bar three of the nine sites surveyed along the French Line, but was not recorded at any of the ten sites along the Rig Road (Figure 4). Elliott traps were set at a number of sites along the French Line in an effort to catch an animal to confirm whether the tracks belonged to ampurta or mulgara. Trapping was successful at only one site, on the intersection of the Rig Road and French Line. One female ampurta was trapped at this site, at least confirming the identity of the tracks there. However, caution should be taken in assuming that all of the *Dasycercus* tracks recorded at sites on the French Line belong to ampurta. The habitat in these areas was characaterised by cane grass *Zygochloa paradoxa* topped sand dunes and spinifex *Triodia basedowii* in the interdune areas. Canegrass covered sand dunes are considered the preferred habitat of ampurta, while mulgara prefer sandy habitats with a spinifex cover. It is possible that both species could be found in this part of the Simpson Desert so further work may be needed to confirm that mulgara are not also present here.

Small rodent tracks were recorded at 13 of the 19 sites. Trapping at four of the sites resulted in the capture of two species, the sandy inland mouse *Pseudomys hermannsbergensis* and the introduced house mouse *Mus musculus*. Dunnart tracks were recorded at only one site but the species can not be identified from the tracks alone. No hopping mouse tracks were recorded at all during the surveys, but this, along with the low numbers of dunnart tracks may be indicative of mis-identification rather than their total absence. Kangaroo tracks were recorded at only two of the 19 sites. Small bird tracks were numerous on most sites. These could be identified as grasswren tracks at three sites. Eyrean grasswrens *Amytornis goyderi* were seen and heard at many sites along the French Line so these tracks could be attributed to this species, at least at some of the sites.

Predators

Dingo tracks were recorded at 17 of the 19 survey sites making them the most frequently recorded species during this survey (Figure 5). Cats on the other hand were recorded at only five of the 19 sites, and all of these were along the French Line (Figure 6). There were no fox tracks recorded during this survey, however a fox was seen at one camp confirming that they are present in the system. It is possible that some fox tracks may have been misidentified as dingo tracks, as they are sometimes difficult to distinguish, especially for inexperienced trackers. The failure to record foxes should therefore be viewed with some caution.

Introduced herbivores

Rabbits were recorded at 16 of the 19 survey sites, and were sometimes obviously present in large numbers with extensive warren systems. Camels were also common, with tracks or scats recorded at 16 of the 19 sites (Figure 7). Donkey and cow scats were recorded at ten and two sites respectively, however these scats appeared to be very old and dry and there were no tracks of either species observed during the surveys.

Figure 5. Location of survey sites where dingo *Canis lupus dingo* tracks were located.

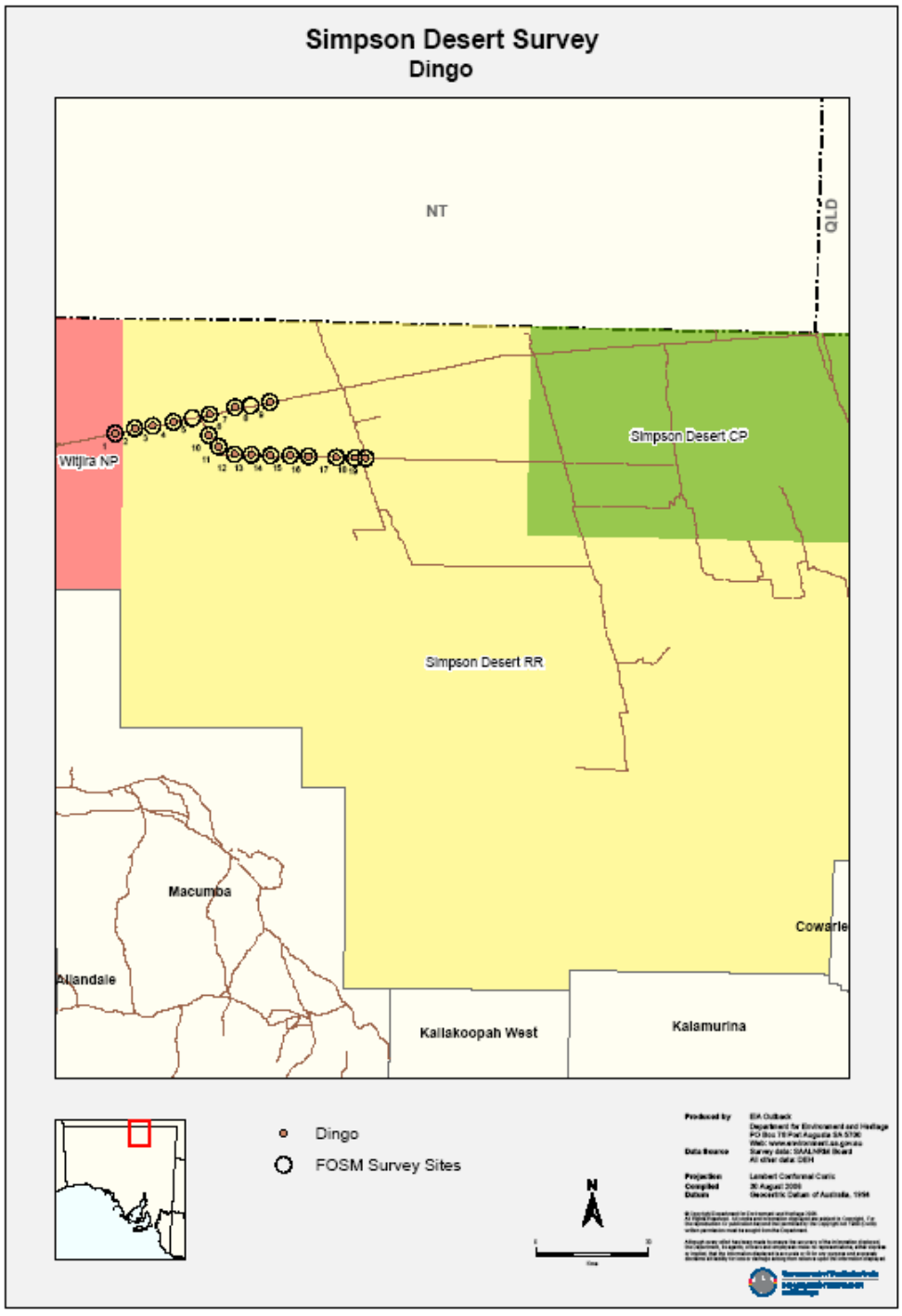


Figure 6. Location of survey sites where cat *Felis catus* tracks were located.

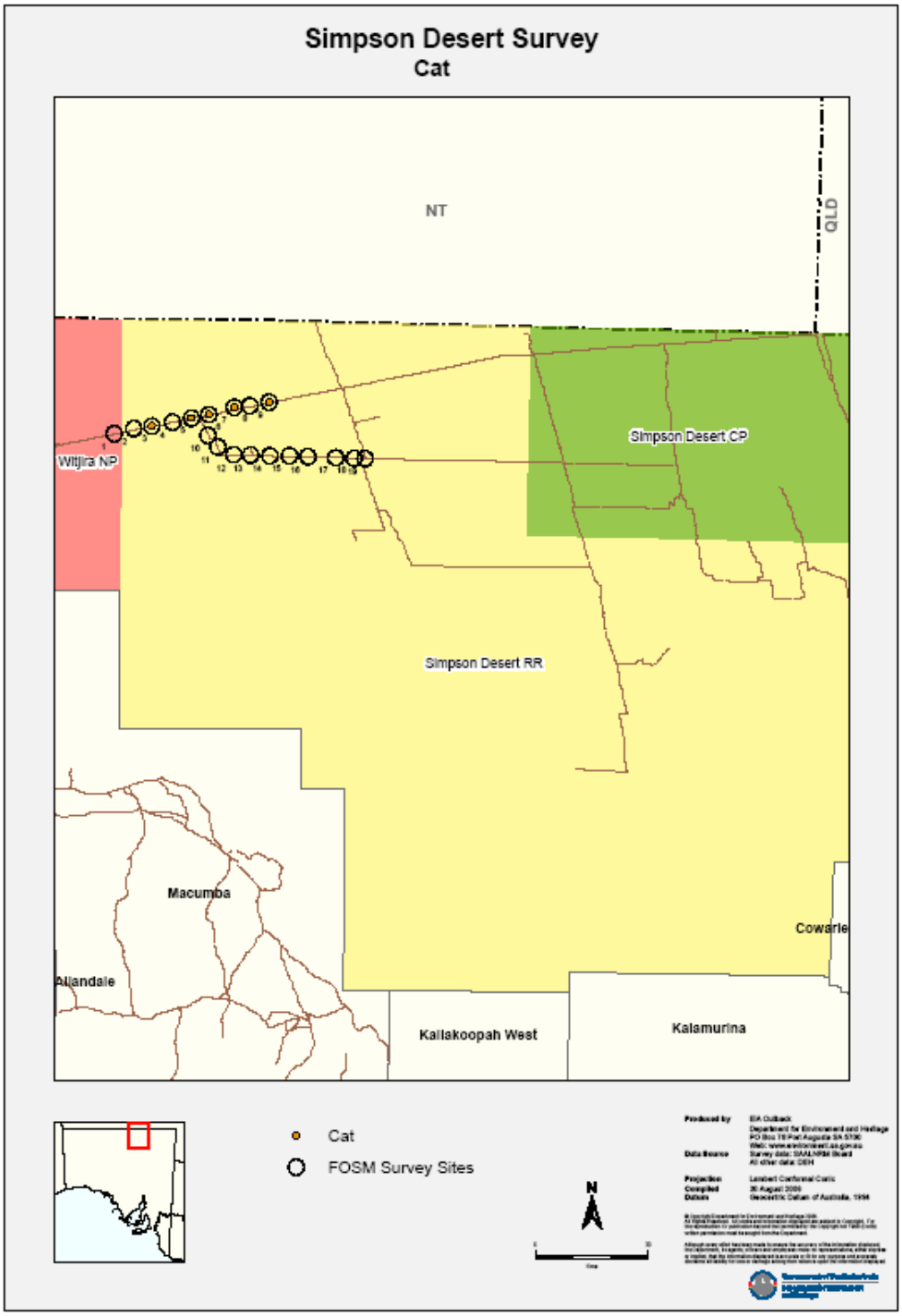


Figure 7. Location of survey sites where camel *Dromaius novahollandiae* tracks were located.

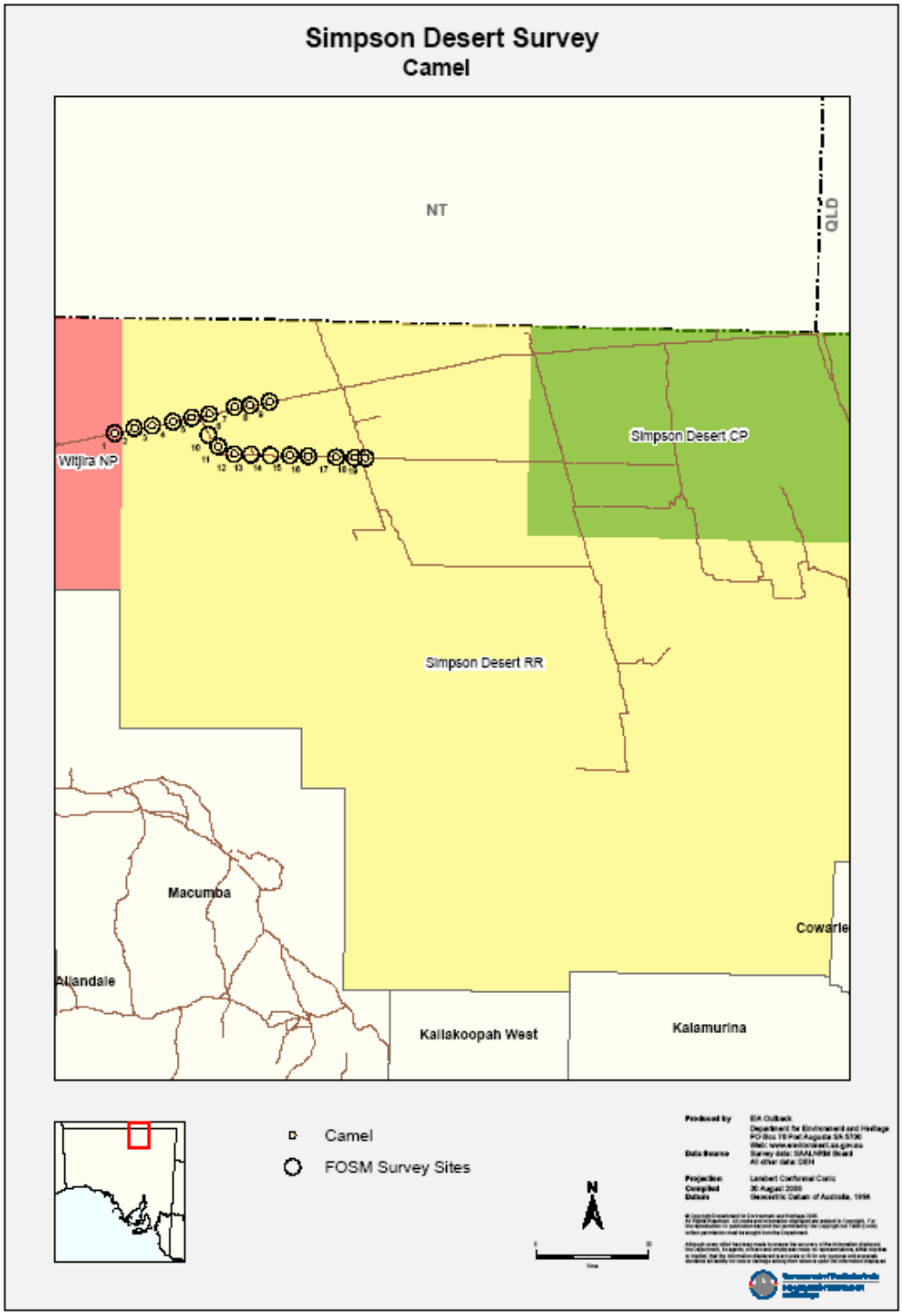


Plate 6. A sandy inland mouse *Pseudomys hermannsbergensis* (top) and an ampurta *Dasycercus hillieri* (bottom).

Plate 7. A leopard ctenotus *Ctenotus pantherinus* caught in a funnel trap

Trapping

Only three species of mammal were caught in the Elliott traps. These were the sandy inland mouse *Pseudomys hermannsbergensis* and ampurta *Dasycercus hillieri* (Plate 6) and the introduced house mouse *Mus musculus.* A number of reptiles were observed and captured in funnel traps. The most common of these was the painted dragon *Ctenophorus pictus* and the military dragon *Ctenophorus isolepis*. Other species that were trapped included the canegrass dragon *Diporiphora winneckie*, the leopard ctenotus *Ctenotus pantherinus* (Plate 7) and *Ctenotus brooksi*. A complete list of all mammals, birds and reptiles recorded during the survey is provided in Appendix 1.

Discussion

Marsupial Moles

The density of marsupial mole holes recorded in crest and mid-slope trenches along the French Line and Rig Road in the western Simpson Desert during this survey were substantially lower than that recorded along the French Line in 2005 (Benshemesh 2005). However the density of holes was very similar in the lower dune trenches. These results confirm the findings of Benshemesh (2005) that marsupial mole activity in the western Simpson Desert seems to be highest in the crest and mid-slope sections of dunes. Our results also indicate low overall levels of marsupial mole abundance in comparison with

other sites in central Australia, particularly around Uluru and Watarrka and the Anangu-Pitjantjatjara Lands.

This survey represents the first effort of this kind to locate marsupial moles as far south in the Simpson Desert as the Rig Road. Our results are therefore significant in extending the known distribution of the species within the Simpson Desert. We have also provided finer scale resolution of marsupial mole distribution along the French Line. Further surveying east of the sites described here will provide important information about the eastern boundary of the distribution of the species in the Simpson Desert.

Track Surveys

The track surveys described here have provided some detailed information about the distribution of a number of key species in the Simpson Desert. Ampurta sign was common along the French Line but was not recorded at all along the Rig Road. It seemed that animal activity (except for dingo and camel) was much lower along the Rig Road and this may be a result of the drier conditions in this part of the Simpson Desert. The vegetation cover on the sand dunes along the Rig Road was noticeably sparser with far less fresh growth than the dunes on the French Line. There was evidence of recent rain along the French Line, including surface water and new grass cover but this had clearly not extended as far south as the Rig Road.

Our results show that native animals were present on sites with both introduced predators and herbivores. These results were consistent with the findings of a recent survey that used this track survey method to assess the distribution of the ampurta around Lake Eyre South and along the Birdsville Track (Southgate 2006). In that survey, tracks of ampurta were recorded at the same sites as dingoes, foxes and cats, as well as cattle and horses. Other native mammals, including small rodent and dunnart tracks were also recorded concurrently with introduced predator and herbivore sign.

Training for Friends Of Simpson Desert Group

This project has provided considerable opportunity for members of the Friends of Simpson Desert group to improve their animal tracking skills and to learn the techniques involved in the trench survey method for marsupial moles. It was clear from the two weeks of field work that even the most novice participant in this survey could quickly obtain a sufficient level of skill to carry out trench surveys for marsupial moles. Where there was any doubt about the identification of marsupial mole holes, participants in the survey were encouraged to take digital photographs to allow confirmation of their observations by more other people (such as wildlife researchers, regional ecologists etc) at a later date. Participants were also shown how to operate GPS units to record locational information for each trench and were shown how to take good quality photos for later identification of mole holes.

Members of the Friends of Simpson group also enthusiastically participated in the track surveys. Because of the large number of species that could potentially be encountered using this methodology, more training was required for most of the participants. However, by the end of the survey most participants could identify tracks and scats for

most introduced herbivores, cats and dingoes. Our results indicate that there may have been some mis-identification of fox tracks as dingo but it is fairly widely recognized that the tracks of these two species can be difficult to distinguish. Again, participants in the survey were encouraged to take digital photos of all tracks to allow confirmation of their identification at a later date. A substantial effort was made by the author to demonstrate how to take photos of tracks or scats to ensure that they actually enable accurate identification (this included the use of a scale bar etc). Participants in this survey were also shown how to correctly fill in data sheets and record locational information.

It was clear at the end of the survey that members of the Friends of Simpson Desert group were very enthusiastic about undertaking further surveys using the methodologies they had learnt during this survey. It is the belief of the author that they are definitely capable of undertaking this work independently in the future. To assist the group to successfully undertake future surveys, two survey kits were purchased with the assistance of funding from the Rangelands Action Project (administered by the South Australian Arid Lands NRM Board). These kits include a GPS unit, a digital camera, datasheets, field identification kits, survey handbooks, scale bars and all the equipment required to record survey results. During the survey reported here, all members of the Friends of Simpson Desert group were given an opportunity to use these kits and familiarize themselves with the content of the kits. Specific training was also provided for the GPS unit and for sample photography.

Recommendations

It is recommended that the Friends of Simpson Desert pursue further surveys in the Simpson Desert using the methods described in this report. For marsupial moles the following activities should be considered:

- Continue surveys at 5 km intervals along the French Line to provide fine scale resolution of the distribution of marsupial moles in this part of the desert, in particular aiming to identify the easterly limit of the distribution.
- Continue surveys along the Rig Road, east of Lynne's Junction.
- Carry out surveys along tracks connecting the French Line and Rig Road to investigate the north-south gradient in marsupial mole distribution.
- Supplement any trench surveys with predator scat collection to investigate the potential impact of predation on marsupial moles and to assist in defining the distribution of the species.
- Consider undertaking molehole simulation exercises (Benshemesh 2004) to provide some indication of the longevity of mole holes in this part of the Simpson Desert.

It is also recommended that the Friends of Simpson Desert continue to utilize the track survey methodology to provide information about the abundance and distribution of native and introduced species in the Simpson Desert. In relation to the results reported her, the following specific recommendations are made:

- Work with an appropriately qualified person to undertake trapping to confirm the identity of *Dasycercus* (ampurta or mulgara) tracks along the French Line.
- Undertake track surveys concurrently with marsupial mole surveys to increase efficiency and to provide a broad scale indication of the distribution of native and introduced species in the Simpson Desert.
- Combine the data collected from track surveys in the Simpson Desert with that collected elsewhere in the broader region to contribute to the regional management of wildlife.

Acknowledgements

I would like to thank the members of the Friends of Simpson Desert group for their enthusiasm and interest during this survey. Their willingness to learn and try new techniques was quite inspiring. I would particularly like to thank Alan Hancox for his assistance and efforts leading up to this survey. Gavin Ibbett assisted with the surveys and helped demonstrate all techniques to the Friends of Simpson group. Dr Joe Benshemesh provided technical advice about marsupial mole survey techniques. The Rangelands Action Project provided financial assistance to set up survey kits that will provide the Friends of Simpson Desert and other users in the region with an invaluable asset.

References.

Benshemesh J (2004) 'Recovery Plan for Marsupial Moles Notoryctes typhlops and N. caurinus 2005-2010.' Northern Territory Department of Infrastructure, Planning and Environment, Alice Springs.

Benshemesh J (2005) 'Marsupial Mole survey of the Simpson Desert: Preliminary Report (Draft).'

Southgate R (2006) 'Investigation of Dasycercus distribution on canegrass sand dunes in the Lake Eyre region. Report to the Department of Environment and Heritage.'

APPENDIX 1. Location of survey sites and all species recorded during Friends of Simpson survey, May-June 2006. (All co-ordinates are in datum WGS 84).

Site	Lat	Long	Species	Common Name	Comments
FOSM1	7093616	53 615591			
FOSM2	7095080	53 620849	Dasycercus hillieri	Ampurta	Tracks and burrows
FOSM2	7095080	53 620849	Pseudomys hermannsbergensis	Sandy inland mouse	Elliott trap
FOSM3	7095686	53625548	Aphelocephala nigricincta	Banded whiteface	
FOSM4	7096747	53 630984	Dasycercus hillieri	Ampurta	Tracks
FOSM4	7096747	53 630984	Epthianura tricolor	Crimson chat	
FOSM4	7096747	53 630984	Artamus cinereus	Black-faced woodswallow	
FOSM5	7097815	53 635976	Dasycercus hillieri	Ampurta	Tracks
FOSM5	7097815	53 635976	Epthianura tricolor	Crimson chat	
FOSM5	7097815	53 635976	Ctenophorus pictus	Painted dragon	
FOSM6	7098764	53 640667	Dasycercus hillieri	Ampurta	Tracks
FOSM6	7098764	53 640667	Notoryctes typhlops	Southern Marsupial Mole	Moleholes in trenches
FOSM6	7098764	53 640667	Ctenophorus pictus	Painted dragon	
FOSM6	7098764	53 640667	Rhipidura leucophrys	Willie wagtail	
FOSM6	7098764	53 640667	Malarus leucopterus	White-winged fairy wren	
FOSM7	7100716	53 647296	Dasycercus hillieri	Ampurta	Tracks, scats, burrows
FOSM7	7100716	53 647296	Pseudomys hermannsbergensis	Sandy inland mouse	Elliott trap
FOSM7	7100716	53 647296	Notoryctes typhlops	Southern Marsupial Mole	Moleholes in trenches
FOSM8	7101063	53 651355	Aphelocephala nigricincta	Banded whiteface	
FOSM9	7102090	53 656450	Dasycercus hillieri	Ampurta	Tracks
FOSM9	7102090	53 656450	Notoryctes typhlops	Southern Marsupial Mole	Moleholes in trenches
FOSM10	7093321	53 640339			
FOSM11	7090216	53 642916	Notoryctes typhlops	Southern Marsupial Mole	Moleholes in trenches
FOSM12	7088195	53 647237	Notoryctes typhlops	Southern Marsupial Mole	Moleholes in trenches
FOSM13	7088103	53 651607	Notoryctes typhlops	Southern Marsupial Mole	Moleholes in trenches
FOSM13	7088103	53 651607	Rhipidura leucophrys	Willie wagtail	

APPENDIX 1 cont….

FOSM13	7088103	53 651607	Artamus cinereus	Black-faced woodswallow	
FOSM13	7088103	53 651607	Cheramoeca leucosternus	White-backed swallow	
FOSM13	7088103	53 651607	Corvus coronoides	Australian raven	
FOSM13	7088103	53 651607	Oreoica gutturalis	Crested bellbird	
FOSM13	7088103	53 651607	Taeniopygia guttata	Zebra finch	
FOSM13	7088103	53 651607	Aquila audax	Wedgetail eagle	
FOSM13	7088103	53 651607	Malarus lamberti	Variegated fairy wren	
FOSM14	7087958	53 656676	Notoryctes typhlops	Southern Marsupial Mole	Moleholes in trenches
FOSM15	7087900	53 661846	Notoryctes typhlops	Southern Marsupial Mole	Moleholes in trenches
FOSM15	7087900	53 661846	Malarus leucopterus	White-winged fairy wren	
FOSM15	7087900	53 661846	Aphelocephala nigricincta	Banded whiteface	
FOSM16	7087726	53 666697			
FOSM17	7087481	53 674084	Notoryctes typhlops	Southern Marsupial Mole	Moleholes in trenches
FOSM18	7087354	53 678992	Pseudomys hermannsbergensis	Sandy inland mouse	Elliott trap
FOSM18	7087354	53 678992	Diporiphora winnecki	Canegrass dragon	Funnel trap
FOSM18	7087354	53 678992	Ctenotus pantherinus	Leopard ctenotus	Funnel trap
FOSM18	7087354	53 678992	Ctenotus brooksi		Funnel trap
FOSM19	7087266	53 681846			
Rig Rd Camp	7097762	53 638211	Dasycercus hillieri	Ampurta	Elliott trap
Rig Rd Camp	7097762	53 638211	Pseudomys hermannsbergensis	Sandy inland mouse	Elliott trap