Survey for the Black-flanked Rock Wallaby (*Petrogale lateralis lateralis*) in the Murchison Gorge, Kalbarri National Park

May- June 2008

Petrogale lateralis lateralis in the wheatbelt Photo: Rowan Inglis

Sonja Creese[1] and Renée Hartley[2]

[1] Technical Officer- Back from the Brink Project, Department of Environment and Conservation

[2] Conservation Officer- Back from the Brink Project, Department of Environment and Conservation

Acknowledgements

Many thanks to the following people for providing valuable assistance with this project:

Russell Asplund	National Park Ranger, Kalbarri National Park
Simon Cherriman	Technical Officer, Back from the Brink Project
Gail Drury	Volunteer
Melanie Ioppolo	Clerical Officer
Phil Moore	Volunteer
Michael O'Dene	Indigenous Trainee, Kalbarri National Park
Mike Paxman	Senior Ranger, Kalbarri National Park
Dr David Pearson	Principle Research Scientist, DEC Science
Gemma Phelan	Conservation Officer, Back from the Brink Project
Jaime Piotrowski	Volunteer
Danny Shilling	Ranger Assistant, Kalbarri National Park

Contents

Introduction

The black-flanked rock wallaby (*Petrogale lateralis lateralis*) is a threatened species targeted by the *Back from the Brink* project. The project aims to increase the security of threatened flora, fauna and ecological communities in the Northern Agricultural Region (NAR), through the identification and implementation of recovery actions. The project is a three-year project implemented by Department of Environment and Conservation and funded by the Federal and State Governments and administered by the Northern Agricultural Catchment Council.

Petrogale laterakis lateralis is considered locally extinct in the Murchison Gorge in Kalbarri, however surveys to date have not been adequate to consider conclusive. In light of this, under the *Back from the Brink* project, surveys were conducted to assess the current status of the *P. l lateralis* within the NAR from the 12th to16th of May 2008 and the 26th to 22nd of June 2008 in the Murchison River gorge, Kalbarri National Park.

Taxonomy

Petrogale lateralis lateralis is a medium sized macropod with males ranging from 4.1 to 5 kilograms (Strahan 1995). Females are 30% smaller than males of the same age (Sharman and Maynes 1988) ranging from 3.1 to 3.8 kilograms. Males have an average tail length of 551 millimeters and 490 millimeters in females. *P. l. lateralis* are a dark grey-brown colour with a paler chest with a dark brown belly. Their face is dark with a distinctive white-sandy coloured stripe on the cheek (Strahan 1995). As their name suggests their feet are sandy with black digits. They contain a white side-stripe with a wider dark brown stripe immediately ventral, extending from the auxiliary patch to the thighs (Strahan 1995). The legs of rock wallabies are shorter and more robust and the forelimbs proportionately stronger than those of other wallabies and kangaroos in the Macropodidae family (Le Soueffe 1922). The soles of the hind feet are extensively granulated to create friction and stability when moving across rocky surfaces, whilst the tail acts as a balancing aid (Sharman and Maynes, 1988).

Habitat

Davies *et al.* (2007) conducted a study throughout the central wheatbelt region of Western Australia to develop a habitat ranking system for *Petrogale lateralis*. The study assessed seven habitat variables including:

- Rock Complexity (ranked out of 20)
- Vegetation type
- Fox control (absent or present)
- Area of suitable habitat (ha)
- Evidence of past/ present distribution
- Aspect
- Rock to vegetation ratio

The complexity of the rocky outcrop with the presence of caves and ledges was considered to be the most important attributes of a site. The general habitat requirements of most species of rock wallabies have been listed by the majority of researchers as complex boulders with caves and crevices, with a food source dominated by grass species (Davies *et al*. 2007). These habitat attributes were used to determine suitable areas of rock wallaby habitat to survey.

Threats

Feral goats

Feral goats (*Capra hircus*) in the Murchison River Gorge are prolific. Competition from introduced herbivores has been implicated as a limiting factor to rock wallaby populations and could be particularly detrimental to rock wallabies because of their restricted foraging range (Capararo 1994). Goats are thought to compete with rock wallaby populations for food and shelter (Dawson and Ellis 1979; Shepherd 1990) and the capacities of rock wallabies to respond to seasonal conditions, such as drought, may be hindered by the impact caused by goats (Henzell 1990). Feral goats were observed during the entire survey period and goat scats were found in essentially every cave and crevice searched (see Appendix 2 and 3 for species lists and photos).

Foxes

Foxes are considered a threat to the survival of *Petrogale lateralis lateralis*. The study conducted by Kinnear *et al*. (1998) on the predation by the European Red Fox on *P. lateralis* populations in the central wheatbelt found that once fox numbers were controlled, populations of *P. l. lateralis* with numbers as low as ten to twenty individuals are often capable of a rapid recovery.

Environmental Conditions

The influence of altered environmental conditions, such as fire regimes and climate, on *Petrogale lateralis lateralis* and its habitat are largely unknown and poorly understood, however have the potential to have a significant impact.

Previous survey effort

Previous surveys of the Murchison River Gorge conducted in 1979 found that the number of *Petrogale lateralis lateralis* present was low. The last reported sighting of the species in Kalbarri National Park was the result of a survey in June 1995, in which one individual was reported near Hawks Head lookout. DEC staff conducted a further spotlight survey in 2000, concentrating on the Hawks Head and Ross Graham areas; however, no rock wallabies were sighted. Anecdotal evidence from Kalbarri residents suggests that rock wallabies were present at Hawks Head lookout and The Loop approximately fifteen years ago, with no reported sightings since 1995.

Methods

Site selection

The Murchison River Gorge spans over 80 kilometres. It was not possible to survey the entire length of gorge during the given timeframe and resources. Therefore, sites were chosen on the basis of:

- previous records, sightings and signs of rock wallabies in the area;
- habitat considered suitable, identified through local knowledge and resources such as aerial photography; and
- suitable access for staff and volunteers.

The sites selected were thus narrowed down to the areas west of Betties Crossing, Darlinu, Four Ways, Hardabut, Hawks Head lookout, Little-Z, Ross Graham lookout, Spring Road, The Loop and Z-Bend (Figure 1).

Rocky areas containing the specific attributes associated with optimal rock wallaby habitat were selected at each survey site whilst walking along the gorge floor. Any caves, boulders or crevices in this area were then searched for rock wallaby scats. This saved time and focused efforts on the areas where rock wallabies were more likely to occur as opposed to climbing up and down the entire stretch of the gorge.

Staff and safety

Given the location and conditions of the survey area, the upmost care was taken to ensure all staff were well informed about the operation before agreeing to participate, staff were physically capable of the conditions and that safety procedures were of the highest standard.

Please see Appendix 1 for the staff and safety information sheets provided to each member of the team and carried on site by each of the group leaders.

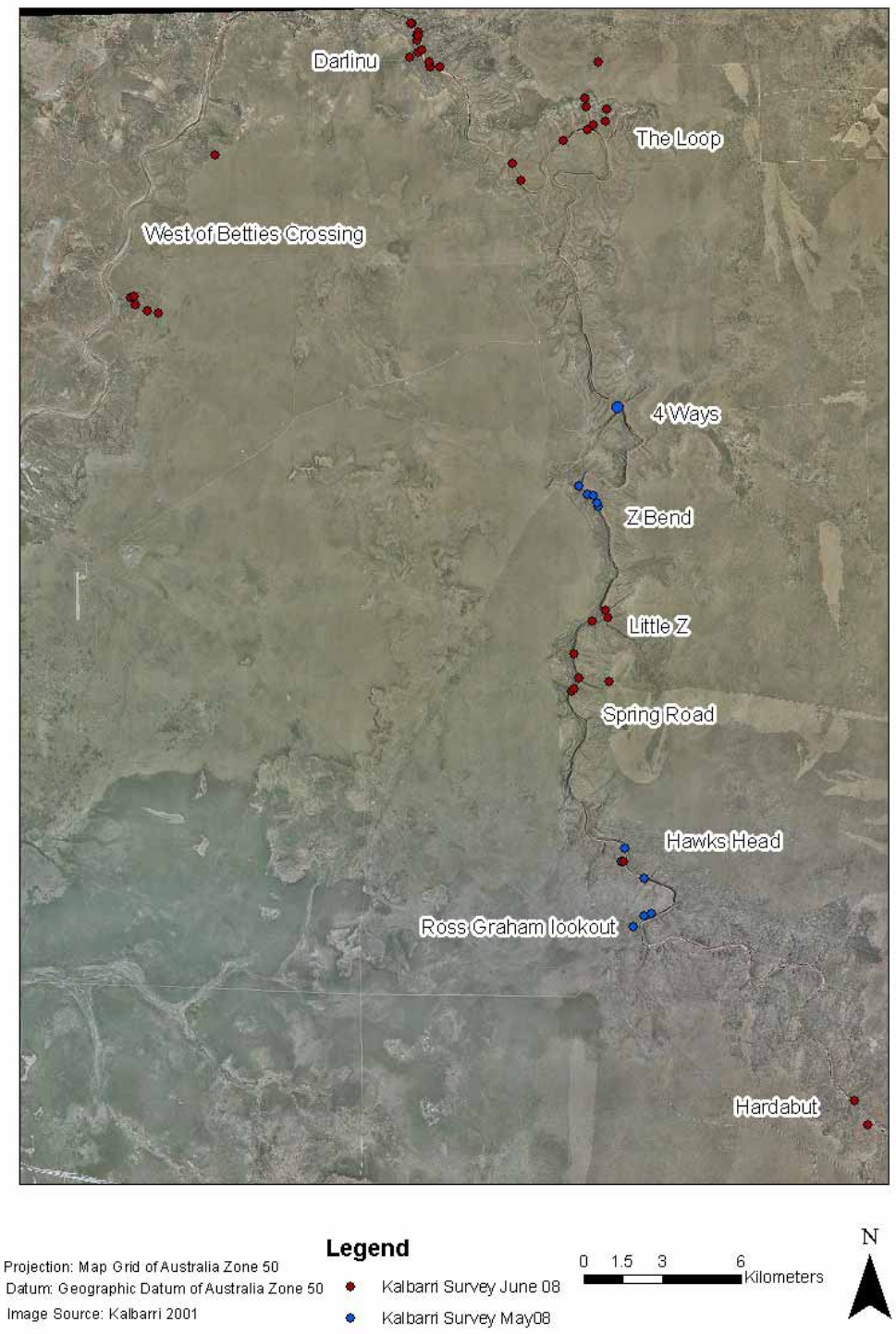


Figure 1. Total area of the Murchison Gorge surveyed for *Petrogale lateralis lateralis* in May and June 2008

Results

Betties Crossing (West)

The Murchison River Gorge widens to the west of Betties Crossing (Figure 2). The structure of the landscape was different to the other areas surveyed and the suitable rock wallaby habitat located in this area consisted mainly of isolated rock walls with fallen boulders. These walls were unable to be adequately searched for rock wallaby scats due to the time it took to negotiate the rocky landscape. The destruction by feral goats is evident in the areas adjacent to the Murchison House Station. The vegetation has been heavily grazed and the landscape is severely degraded.

Darlinu

The east and west side of the gorge at Darlinu was searched covering a total area of approximately 3 kilometres (Figure 3). Rock wallaby scats were found on the eastern side of the gorge (Figure 3, between Sites 18 and 19, sites of positive records shown in red) in an area that was not considered optimal habitat for rock wallabies, as well as in a cave on the western side. The incline of the rock face was not very steep and it was easily accessible to predators and introduced herbivores. There were very few suitable caves and crevices in this area. Scats were found in piles of three to four, in reasonably open areas.

Four Ways

The southwest gully of Four Ways was thoroughly surveyed (figure 4). The vegetation on the northern gully wall was too thick to provide suitable rock wallaby habitat, however the south side provided some suitable crevices. The northeastern gully provided few crevices other than at the junction with the main gorge. Downstream provided very little suitable habitat. The upstream to the south-southeast, was considered unsuitable and in many parts inaccessible. All areas of suitable, accessible habitat were carefully checked, with no evidence of *Petrogale lateralis lateralis* found.

Hardabut

Hardabut contained isolated areas of good rock wallaby habitat. There was rock face with a substantial rock fall on the western side of the gorge and on the eastern side old rock wallaby scats were found in a crevice amongst fallen boulders at (Figure 5, Site 43). Wild pig diggings were scattered throughout the riverbanks of the Hardabut section of the gorge.

Hawks Head lookout

The survey area at Hawks Head lookout (Figure 2) contained optimal rock wallaby habitat consisting of steep rock faces, fallen boulders, caves and crevices. The last known sighting of *Petrogale lateralis lateralis* in the Murchison Gorge was at Hawks Head lookout. This area was searched thoroughly during the day and a spotlighting survey was conducted at dusk and at night. No rock wallabies were sighted during this survey, however old rock wallaby scats were found in one cave situated below the Hawks Head lookout. Old rock wallaby scats were also found in two caves at the end of a side gully on the eastern side of the gorge, opposite Hawks Head lookout (Figure 6, Site 7).

Little-Z and Spring Road

Approximately two kilometres of gorge was searched at Little-Z and Spring Road (Figure 7). No rock wallaby scats were found, with only some small, isolated areas appearing suitable. Although little goat activity was observed at this site, quad bike tracks were noted from the Spring Road access track to the gorge and human and domestic dog footprints covered the sand banks of the river.

Ross Graham lookout

The section of gorge at the Ross Graham lookout (Figure 6) did not contain excellent rock wallaby habitat. There was a lack of fallen boulders and caves to provide shelter for rock wallaby populations. The aspect of the rock faces was gradual and provided easy access to feral goats and predators. Goats have heavily grazed the vegetation in this area.

The Loop

The Loop is a popular destination for tourists, offering remarkable views and walk trails. The area surveyed for rock wallaby habitat is outlined in Figure 8. The rock faces on the northern side of the river at The Loop consisted of weathered sandstone, which contained large shallow overhangs. This was not considered adequate habitat for rock wallabies and is more commonly associated with providing shelter for feral goats and euros.

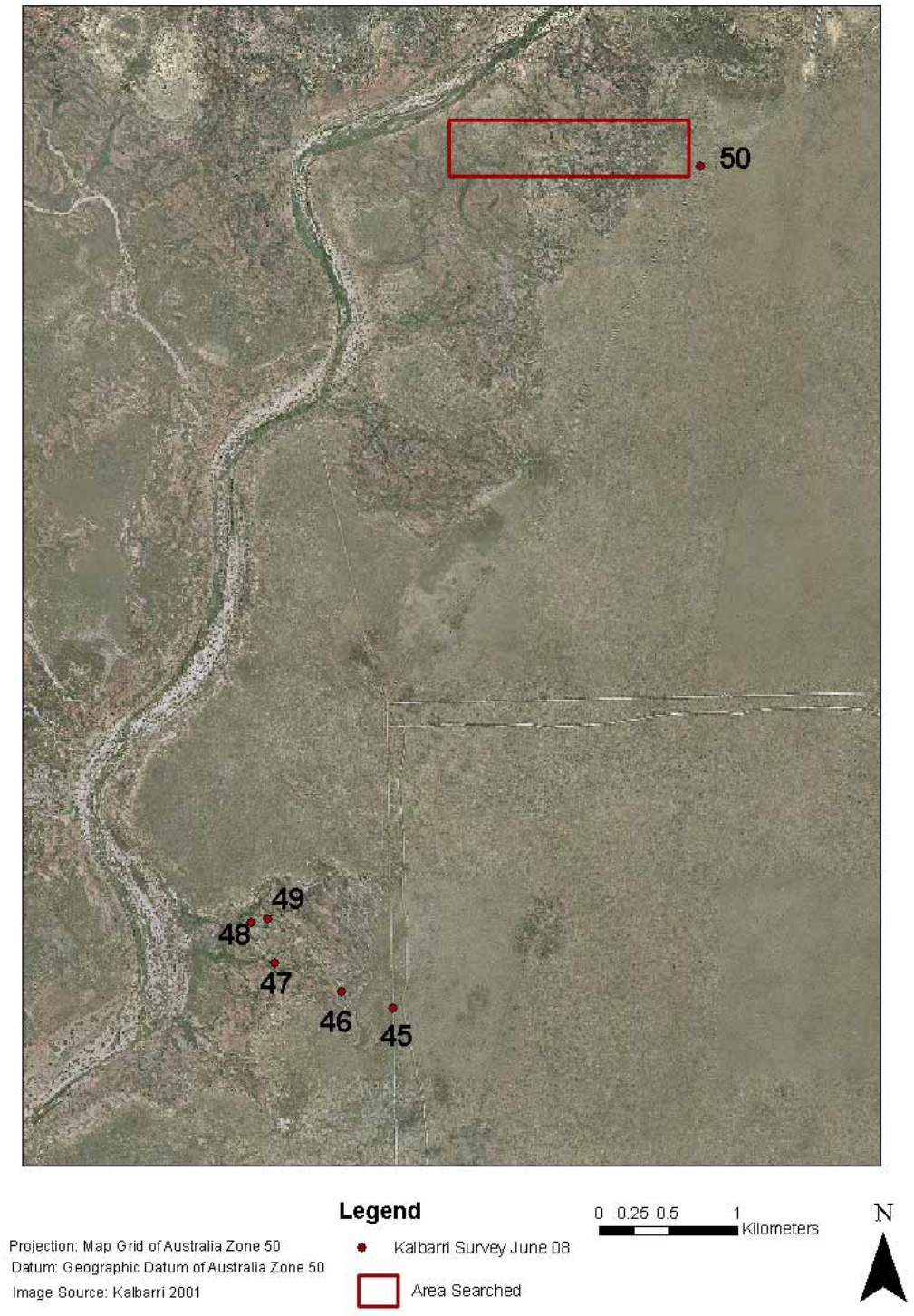
A small section of suitable rock wallaby habitat was observed, consisting of large fallen boulders and crevices (Figure 8, site 28). This area was not searched for rock wallaby scats; it was inaccessible, as the river could not be crossed safely at this point.

The three side gorges of The Loop otherwise known as the ‘three fingers’ (Figure 8, site 32-34) were approached from an access track on the northern side and searched for suitable rock wallaby habitat. It was not possible to climb amongst these, as the sandstone was too brittle. Therefore an assessment was made from the edge looking down into each gorge as to whether it contained suitable habitat for rock wallabies. All three of these side gorges were considered to be unsuitable habitat for rock wallabies, as they comprised mainly of large shallow, horizontal overhangs. Goat and euro scats were evident across large areas of these side gorges.

Three wild pigs were seen whilst conducting the surveys around The Loop.

Z-Bend

The rock faces at the Z-Bend (Figure 9) contained some caves and side gullies that could provide suitable habitat for rock wallabies. Approximately 1 kilometre on the east and west sides of the Z-Bend gorge were surveyed and no evidence of *Petrogale lateralis lateralis* was found.

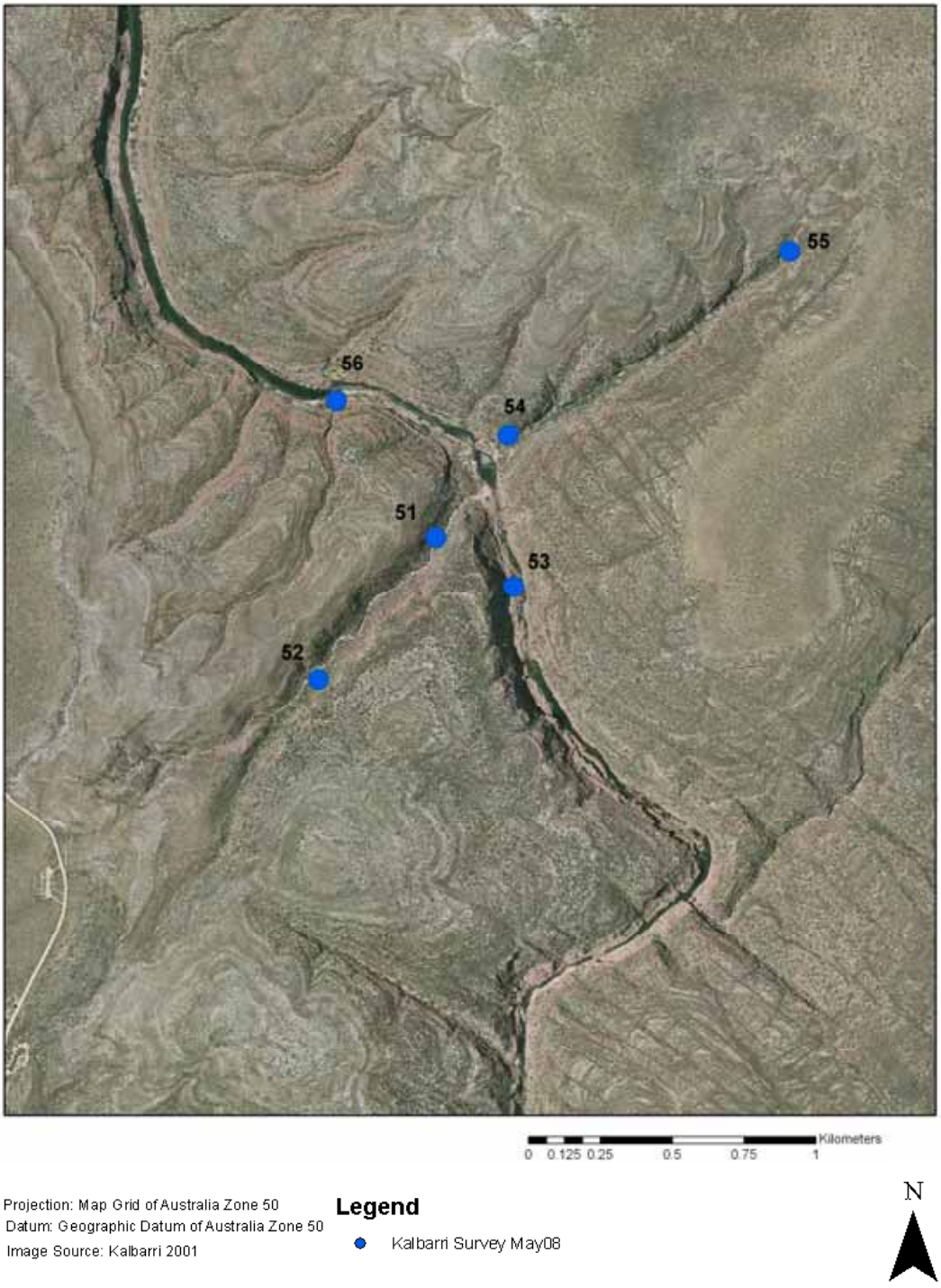


Site 45. Car. **Sites 46 to 49**. Habitat in this area is not suitable with little shelter for rock wallabies and no crevices or rock falls of suitable size. There was a good amount of vegetation present here despite the significant number of goats on the station. **Site 50**. Total area surveyed; a very rugged landscape with shallow overhangs. No rock wallaby scats found.

Figure 2. Areas surveyed west of Betties Crossing, Murchison House Station, June 2008

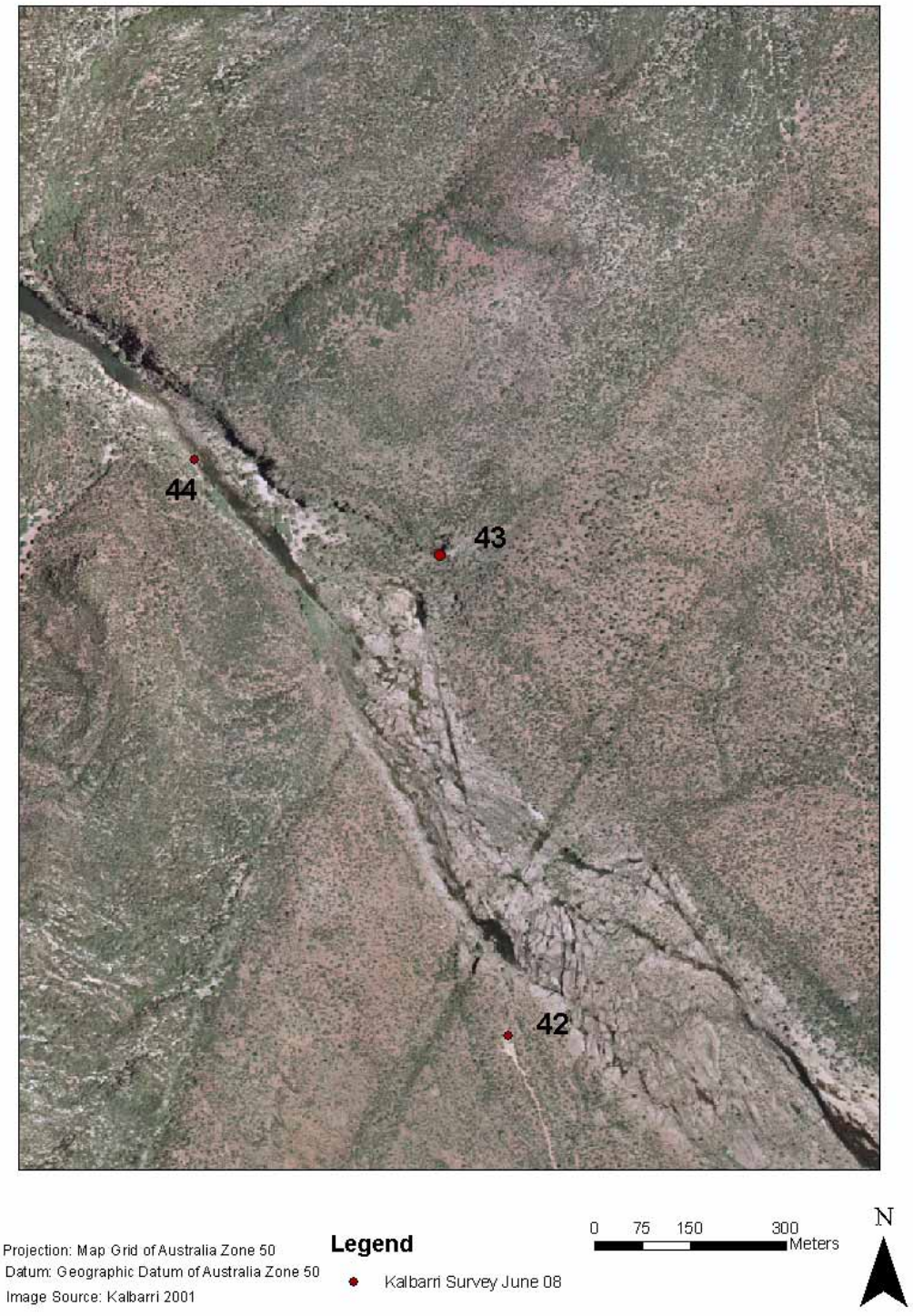
Site 13. Car. **Site 14**. Entrance and exit point into the gorge. **Site 15**. Suitable fallen boulders but no rock wallaby scats found. **Site 16**. Water crossing, furthermost point searched south. **Site 17**. Searched rock wall but no scats found. **Site 18 and 19**. Old rock wallaby scats found on a small rock wall between these points. **Site 20 and 21**. Promising habitat. **Between Sites 24 and 14**. Most promising habitat with many crevices. Goat and kangaroo scats abundant. **Site 22**. Furthermost point searched north. **Site 23**. Crossed Murchison River **Site 24**. Old rock wallaby scats collected from cave.

Figure 3. Area surveyed at Darlinu, Murchison River Gorge, June 2008



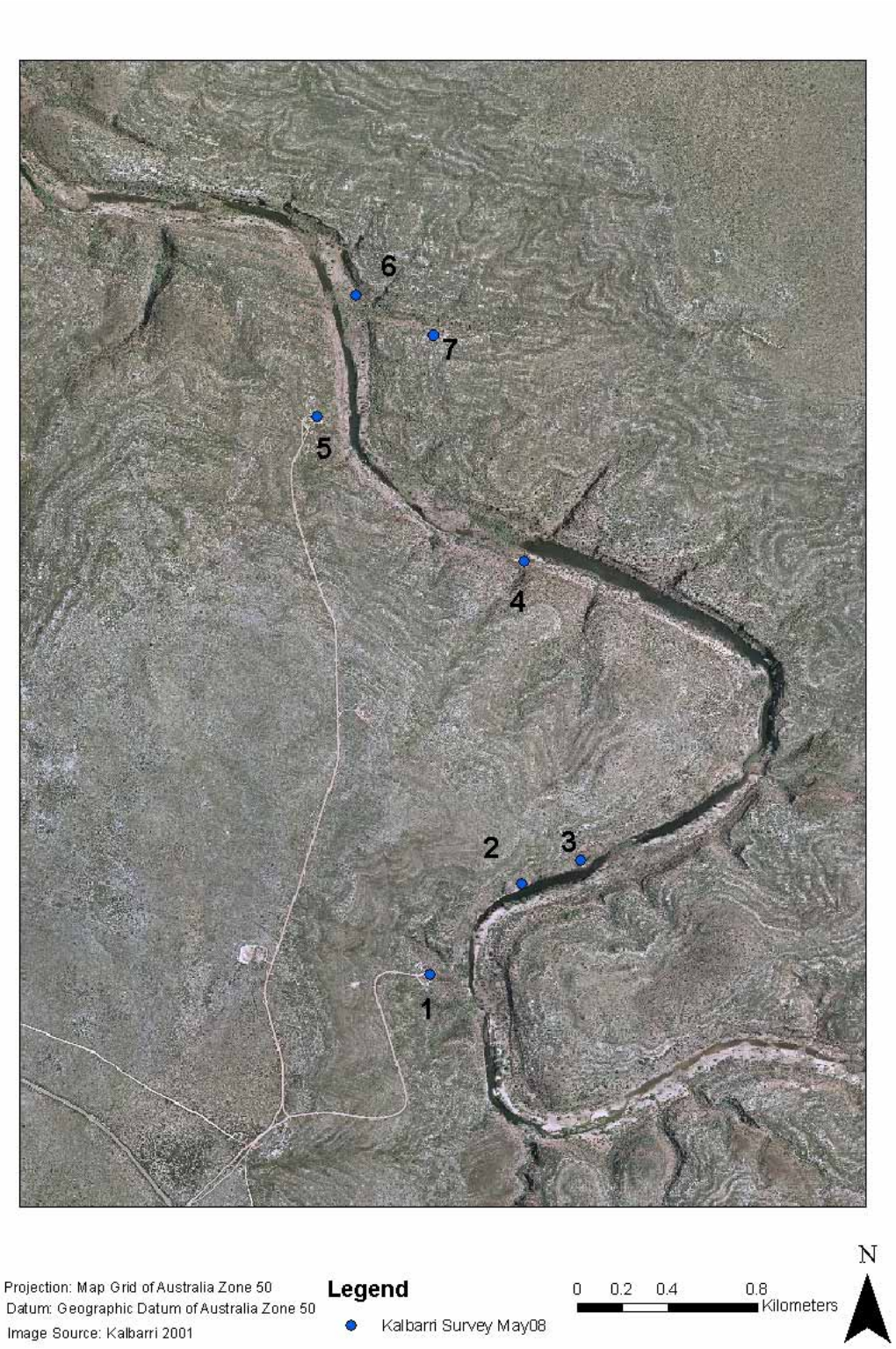
Site 51. Vegetation to thick on the northwest wall, thorough check of potential habitat on southeast wall found no signs. **Site 52**. Vegetation became thick, caves and crevices were few. Turned around having thoroughly checked southwest gorge. **Site 53**. All areas either unsuitable or inaccessible. Few crevices up the top requiring access from top with safety equipment. No points worthy of this effort noted. Turned around 300 m upstream of southwest gorge. **Site 54**. Searched potential habitat, no signs. **Site 55**. Mostly unsuitable in northeast gorge. All promising spots explored. **Site 56**. One spot appeared suitable downstream but no signs found.

Figure 4. Area surveyed at Four Ways in the Murchison River Gorge, May 2008



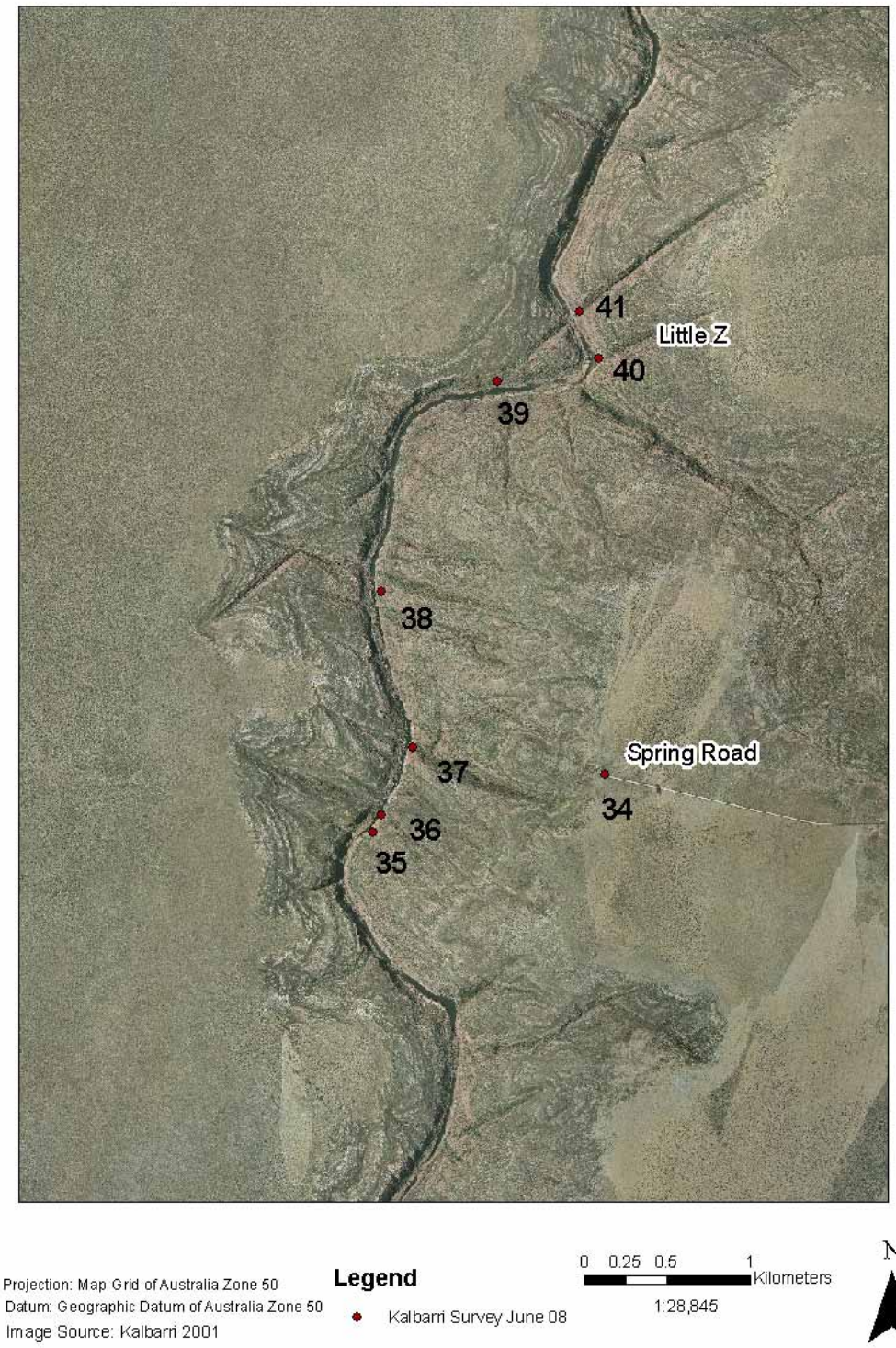
Site 42. Car. **Site 43**. Old rock wallaby scats found in an isolated rock fall, with big boulders. **Site 44**. Furthest point searched on the west side of the gorge. The gorge became less steep and not very rocky from this point onwards on the west side.

Figure 5. Area surveyed at Hardabut at the head of the Murchison River Gorge, June 2008



Site 1. Ross Graham lookout. **Site 2 and 3**. Areas searched for rock wallaby scats. **Site 4**. Suitable rock wallaby habitat. **Site 5**. Hawks Head lookout; scats found in a cave below this site. **Site 6**. Crossed over to the east side of the river. **Site 7**. Searched cave in amongst big grey boulders and found old rock wallaby scats.

Figure 6. Area surveyed at Hawks Head lookout and Ross Graham lookout in the Murchison River Gorge, May 2008



Site 34. Car. **Sites 35 to 38**. Areas searched for rock wallaby scats, though none found. **Site 39**. Numerous rock-falls with a few deep crevices. **Site 40 and 41**. A few promising locations searched but no rock wallaby scats found. Not as many goat or euro scats within this area of the gorge.

Figure 7. Area surveyed at Little-Z and Spring Road in the Murchison River Gorge, June 2008

Site 25, **Site 26**, **Site 27 and 28**. Southern side of the river searched but no suitable habitat. **Sites 29 to 35**. Gullies had gradual slopes and shallow sides with no significant rock faces with easy access to predators and herbivores. Closer to The Loop, the gullies became deeper, however the sandstone was crumbling and there were only large shallow overhangs present. No rock wallaby scats found here**. Site 36**. Car.

Figure 8. Area surveyed at The Loop in the Murchison River Gorge, June 2008

Site 8. Southern limit of the area surveyed. **Site 9 and 10**. Suitable habitat but no rock wallaby scats found. **Site 11**. Searched side gully, though no rock wallaby scats found. **Site 12**. Searched big boulders, however no rock wallaby scats found.

Figure 9. Area surveyed at the Z-Bend section of the Murchison River Gorge, May 2008

Discussion

The surveys conducted in the Murchison Gorge, Kalbarri in May and June 2008 indicate that *Petrogale lateralis lateralis* is locally extinct within the Murchison Gorge. In total, the surveys covered approximately 35 kilometres of the Murchison River Gorge and no *P. l. lateralis* were observed at any of the survey sites. Old rock wallaby scats were located in three sections of the gorge: Darlinu, Hardabut and Hawks Head. One pile was found in a cave below the Hawks Head lookout and further rock wallaby scats were found in two caves in a side gully north of Hawks Head on the eastern side of the gorge. More rock wallaby scats were found in two caves at Hardabut and on both sides of the river at Darlinu. This gives a good indication as to where the species previously inhabited the Murchison gorge and provides valuable information on possible sites for the proposed translocation of *P. l. lateralis*.

It is thought that competition by feral goats, which are abundant within the Murchison Gorge, and predation by foxes has contributed to the decline of *Petrogale lateralis lateralis* in the area. The Murchison Gorge is a popular tourist destination and disturbance from humans may have been a contributing factor to the decline of the rock wallabies within the gorge. However, whilst factors such as proximity to humans, disposal of waste, light and noise levels need to be considered, other populations of rock wallabies are known to co-exist with tourism and wildlife tourism could provide positive outcomes in the form of education and attraction of funding (Davies *et al*. 2007). The fact that the last known sightings of the rock wallaby were at popular tourist destination indicate that tourism is not the primary concern for the species persistence. It may be as result of people spend more time at these sights, therefore being more likely to see rock wallabies at their times of activity, or it may be that human presence deters goats, therefore decreasing their impact on the rock wallabies and their habitat.

It is possible that rock wallabies may occur in areas of the Murchison Gorge that were not surveyed, however it is evident that *Petrogale lateralis lateralis* seems to have disappeared from the areas where populations once occurred approximately twenty years ago.

Management implications

Translocation

A translocation under *Western Shield* is currently proposed for the future conservation of the species.

A key factor in successful translocations is ensuring the threats that caused (or are thought to have caused) the species to become locally extinct are removed or controlled so as not to impact upon the reintroduced individuals. Therefore, translocation of *Petrogale lateralis lateralis* needs to be combined with intensive introduced predator and introduced herbivore control within the Murchison Gorge and Kalbarri National Park.

Reintroduction of species into an area where they once occurred has genetic implications when sourcing individuals from other populations. This should be carefully considered as part of the Translocation Plan.

Hawks Head and the nearby subgorges contained the best rock wallaby habitat out of all of the sites surveyed and should be noted as a suitable translocation site for *Petrogale lateralis lateralis* in the future. The gorge walls consisted of steep rock faces, fallen boulders, caves and crevices. *P. l. lateralis* has previously occurred in this area and there is no evidence of existing populations. Hardabut also contained two isolated sections that had suitable habitat for rock wallabies where old rock wallaby scats were found.

References

Capararo, S. M. (1994). Potential dietary overlap between the Black-footed Rock-wallaby (*Petrogale lateralis*) and two common sympatric herbivores in central Australia. (Uupublished report) The University of New England.

Davies, M., Newsome, D., Moncrieff, D. and Smith, A. (2007). Conserving the Black-flanked Rock-wallaby (*Petrogale lateralis lateralis*) through tourism: Development of a habitat ranking system for translocated animals and the need for ongoing management. *Conservation Science Western Australia* 6 (1) : 1–12, Western Australia.

Dawson, T. J. and Ellis, B. A. (1979). Comparison of the diets of Yellow-footed Rock wallabies and sympatric herbivores in western New South Wales. *Australian Wildlife Research* 4: 127-144.

Henzell, R. P. (1983). Biology and Control of feral goats. Australian Vertebrate Pest Control Conference 7: 142-145.

Kinnear, J. E., Onus, M. L. and Bromilow, R. N. (1988). Fox control and rock wallaby population dynamics. *Australian Wildlife Research* 15: 435-450.

Le Souef, A. S. (1922). Note on some rock-wallabies, genus *Petrogale*, with descriptions of two new species. *Aust. Zool*. 3: 272-276.

Sharman, G. B. and Maynes, G. M. (1988). Kangaroos and their relatives, in Strahan, R (Eds) *The Australian Museum Complete Book of Australian Mammals.* Pp. 363-364.

Shepherd, N. (1990). The distribution and status of the yellow-footed rock-wallaby in New South Wales. *In* P. Copely Ed., *Proceedings of the yellow-footed rock-wallaby management workshop*. National Parks and Wildlife Service, Adelaide.

Strahan, R. (1995). *The mammals of Australia*. Reed New Holland, New South Wales

Appendices

Appendix 1. Staff and safety information sheets supplied to all personnel

Black-flanked Rock Wallaby Survey
Kalbarri National Park, June 16th – 22nd 2008

Task Summary: Collect information on the presence (past and current) or absence of rock wallabies by exploring potential habitat and assessing scat deposits and other signs.

Purpose: Rock wallabies have not been seen in the area for some time. We aim to establish the current status in gorges. A translocation is being considered for the future.

Aim: - To survey over 30 km of gorge and record sites of potential habitat
- Collect potential rock wallaby scats
- To conduct survey in an organised and thorough manner to ensure confidence in results

Safety: see ***Safety Protocols*** document.
All staff are asked to express any safety concerns to their group leader. Team members will not be asked to do anything with which they do not feel comfortable.
At all times, team members are to ensure their actions do not put themselves or any other team member at risk.

Teamwork: Team members are asked to show respect for their fellow team members and staff of the Kalbarri National Park; be empathetic to the strengths and weaknesses of all team members and to endeavour to work together to achieve the task.

Communication: see ***Safety Protocols*** document for communications equipment, etc.
All team members are asked to communicate any difficulties or changes in situation to their team leader.
If there is something team members are unsure of, please ask.

Enjoy: We are fortunate to be working in Kalbarri National Park, it is a special place, please take the time to take in the scenery. We hope that you will enjoy your experience with us!

Group Leaders
Renée Hartley – Group 1 Leader
Sonja Creese – Group 2 Leader

Volunteers
Gemma Phelan
Phil Moore
Jamie Piotrowski

Kalbarri National Park Staff:
Mike Paxman – Senior Ranger
Russel Asplund – Ranger
Michael O'Dene – Indigenous Trainee
Danny Shilling – Ranger Assistant
Melanie Ioppolo – Clerical Officer

Kalbarri Rock Wallaby Survey June 16th-22nd 2008

Safety Protocols

Task Summary: Ground survey of Murchison Gorge, Kalbarri National Park to-

- determine whether Black-footed Rock-wallabies persist in Kalbarri NP
- establish its former distribution and locate potential translocation sites

Method: Ground survey will be conducted in groups of two to three people (3 people per group preferred) with each group hiking sections of the main gorge and side gullies to search for signs of rock-wallaby presence (predominantly characteristically shaped droppings). This will be conducted as a series of long day hikes, shorter night hikes or a combination of the two.

Personnel: Renée Hartley (survey group leader), Sonja Creese, Phil Moore, Jamie Piotrowski, Gemma Phelan, Michael O'Dene, Danny Shilling, Russell Asplund

Safety Equipment: Each group will carry 1st aid kit, satellite phone, GPS, Epirb, 1:100 000 maps and aerial photos of gorge, 3litres water per person, head torches and spare batteries, sun screen, insect repellent, food and personal items. Participants will wear hats, loose fitting clothing and boots or hiking shoes.

Briefing: An initial briefing will be held prior to the survey commencing (June 16th 7.30am) to advise all participants of safety requirements, terrain difficulties , climatic factors, access points and agreed emergency procedures. Short briefings will also be held prior to survey commencement each morning to ensure that all staff are aware of the plans for each day – including the nominated sched. contact person. Briefings will also be held at the end of each day for reflection and feedback.

Communication: Pre-arranged sched. calls will be made at 12:00 and 16:00 to a nominated contact person; an additional sched call will be made at 8am during overnight camp periods. A final call will be also be made at 19:30 to confirm the safe return of all parties to Kalbarri (or nominated camp site). This call will be made to Senior Ranger Mike Paxman by Renée Hartley.

VHF radio coverage (DEC channel 71) available from all Park roads, carparks and fire access tracks.

Field Contacts: Group 1 (group leader Renée Hartley) sat phone 0147 140092 , vehicle Hilux dual cab1QAY 738 VHF radio (Ch 71) in vehicle.

Group 2 (group leader Sonja Creese) sat phone 042421018 vehicle Hilux dual cab 1CHL 256 UHF radio in vehicle only.

DEC Kalbarri HQ 99371140, Senor Ranger Mike Paxman 0417181314 mob, 99371192 home, Ranger Russell Asplund 0427199518, Kalbarri Police 99371006, Ambulance 99370100, SES leader Ron Hayward 0417945668, DEC Geraldton (8am to 5pm) 99215955

Hazards and Safety issues:

Hazard	**Action Required**
No mobile phone or radio coverage within gorge	Group to carry sat phone and EPIRB adhere to agreed sched call arrangements
Fall and slip risk in steep terrain in gorge with	Participants to keep well clear of steep cliff edges and overhangs. Survey to avoid steep exposed

loose rocks, cliff edges and overhangs	areas. All participants physically fit and experienced in hiking in steep terrain and over uneven surfaces.
Difficulty of emergency access	Rescue will require police and SES coordination and management according to standard emergency response protocols.
Participants becoming separated from group	Group to maintain visual and/or voice contact at all times. Participants to wear high visibility safety vests.
Snake bite	Group to carry 1st aid kit with pressure bandage to treat snakebite and participants 1st aid qualified
Dehydration and heat stroke	Participants to carry minimum 3 litres water each and ensure adequate rest breaks and hydration. Participants to wear hats and loose fitting clothing. Survey being conducted in mild weather (late autumn) to reduce risk.
Group becoming disoriented	Group to carry maps and GPS. Local Kalbarri Park staff member to accompany each group where possible.
Road accident	Survey manager Renée Hartley to confirm safe return of participants at end of each day and advise Sen. Ranger M.Paxman

Evacuation Plan: In the event of an emergency (injury or illness to participant) an immediate satellite telephone call will be made to the agreed contact person and an emergency response initiated; scale of response will be dictated by the severity of the emergency. An emergency response will also be initiated within 1 hour of a sched call not being received by nominated contact person.

A major emergency will require that the police be contacted in order to initiate and coordinate an SES search and rescue response. A list of local emergency contact numbers will be held by each survey group leader and also by the nominated sched. contact person. Injured person will be assisted and stabilised by the other members of the survey group until further medical assistance arrives. All participants have senior 1st aid qualifications, with the exception of Phil Moore.

Kalbarri Police, SES and DEC Kalbarri staff have considerable experience in responding to rescue incidents in the Murchison Gorge. Response strategies will be dependant upon the location of the injured person or persons, ease of access and the severity of the illness or injury.

Prepared by: Michael Paxman and Renée Hartley

Approved by:

Rebecca Carter, Acting DM, Geraldton District

Appendix 2. List of fauna species, or their signs, observed during the surveys.

Table 1. Birds

Common Name	**Species Name**
Australian hobby	*Falco longipennis*
Australian pelican	*Pelecanus conspicillatus*
Australian raven	*Corvus coronoides*
Australian ringneck	*Barnardius zonarius*
Barn owl	*Tyto alba*
Brown honeyeater	*Lichmera indistincta*
Fairy martin	*Hirundo ariel*
Nankeen kestrel	*Falco cenchroides*
Osprey	*Pandion haliaetus*
Peregrine falcon	*Falco peregrinus*
Pied butcherbird	*Cracticus nigrogularis*
Red-capped robin	*Petroica goodenovii*
Silvereye	*Zosterops lateralis*
Splendid fairy-wren	*Malurus splendens*
Tree martin	*Hirundo nigricans*
Wedgetailed eagle	*Aquila audax*
Weebill	*Smicrornis brevirostris*
Welcome swallow	*Hirundo neoxena*
Willie wagtail	*Rhipidura leucophrys*

Table 2. Mammals

Common Name	**Species Name**
Black-flanked rock wallaby	*Petrogale lateralis lateralis* (old scats only)
Chuditch	*Dasyurus geoffroii* (tracks)
Echidna	*Tachyglossus aculeatus* (tracks, scats)
Euro	*Macropus robustus*
Goat (introduced)	*Capra hircus*
Pig (introduced)	*Sus scrofa*

Table 3. Reptiles

Common Name	**Species Name**
Ringed brown snake (juvenile)	*Pseudonaja modesta*
Spotted dragon	*Ctenophorus maculatus maculatus*
Varanus sp. (juvenile) (Most likely racehorse monitor	*Varanus tristis* subsp. *tristis*)

Appendix 2. Photographs of survey sites

Except where stated otherwise, all photos by Renée Hartley.

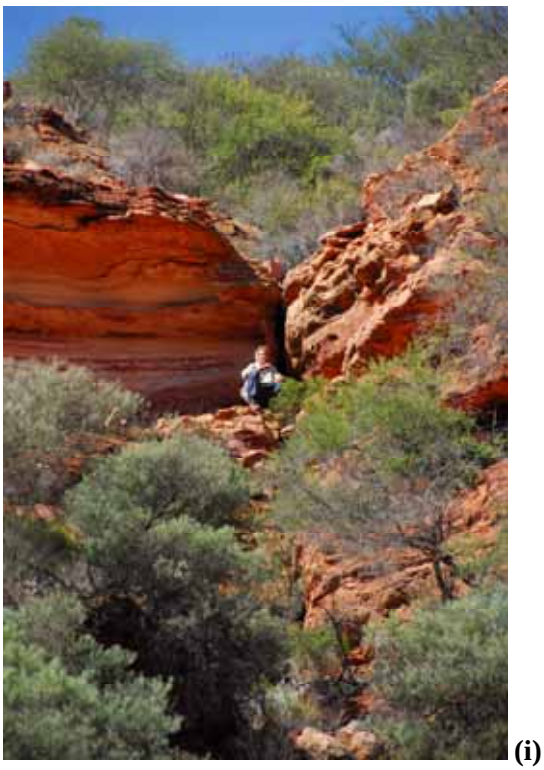
Figure 10. Feral goats observed throughout Kalbarri National Park

Figure 11. Goat tracks and scats in a cave once suitable for black-flanked rock wallabies at Ross Graham lookout.

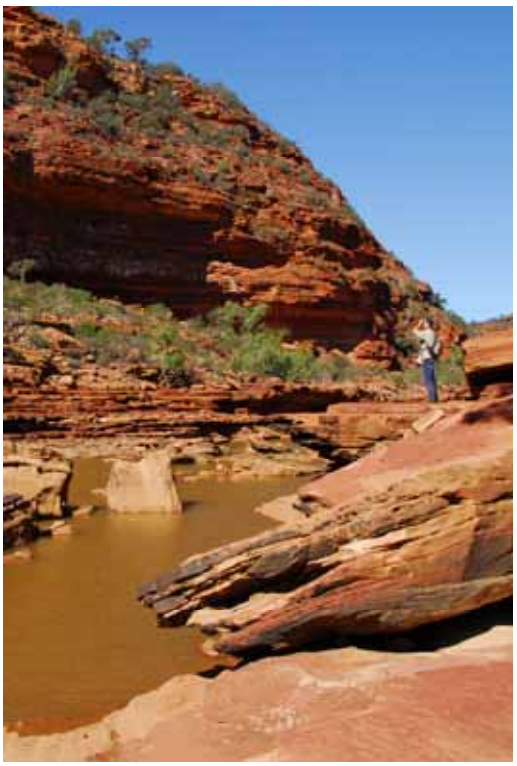
Figure 12. Tutorial for the use of safety and navigational equipment at Hawks Head lookout. Left to right: Jamie Piotrowski, Renée Hartley, Sonja Creese and Gemma Phelan.
Photo by Phil Moore

Figure 13. Area west of Bettie's Crossing.

Figure 14. Darlinu.



(i)



(ii)

Figure 15. Technical Officer, Simon Cherriman, searching crevices at Four Ways (i). Habitat was surveyed with binoculars when inaccessible (ii).

Figure 16. Volunteers, Phil Moore and Jamie Piotrowski, at Hardabut. Technical Officer, Sonja Creese, can be seen in a rock crevice where old black-flanked rock wallaby scats were found.

Figure 17. Habitat at Hawks Head.

Figure 18. Little-Z.

Figure 19. Murchison River gorge at the end of Spring Road.
Photo by Phil Moore

Figure 20. Indigenous Trainee, Michael O'Dene and volunteer, Simon Cherriman, surveying the area upstream of the Ross Graham lookout.

Figure 21. The Loop.

Figure 22. Z-Bend.
Photo by Mike Paxman