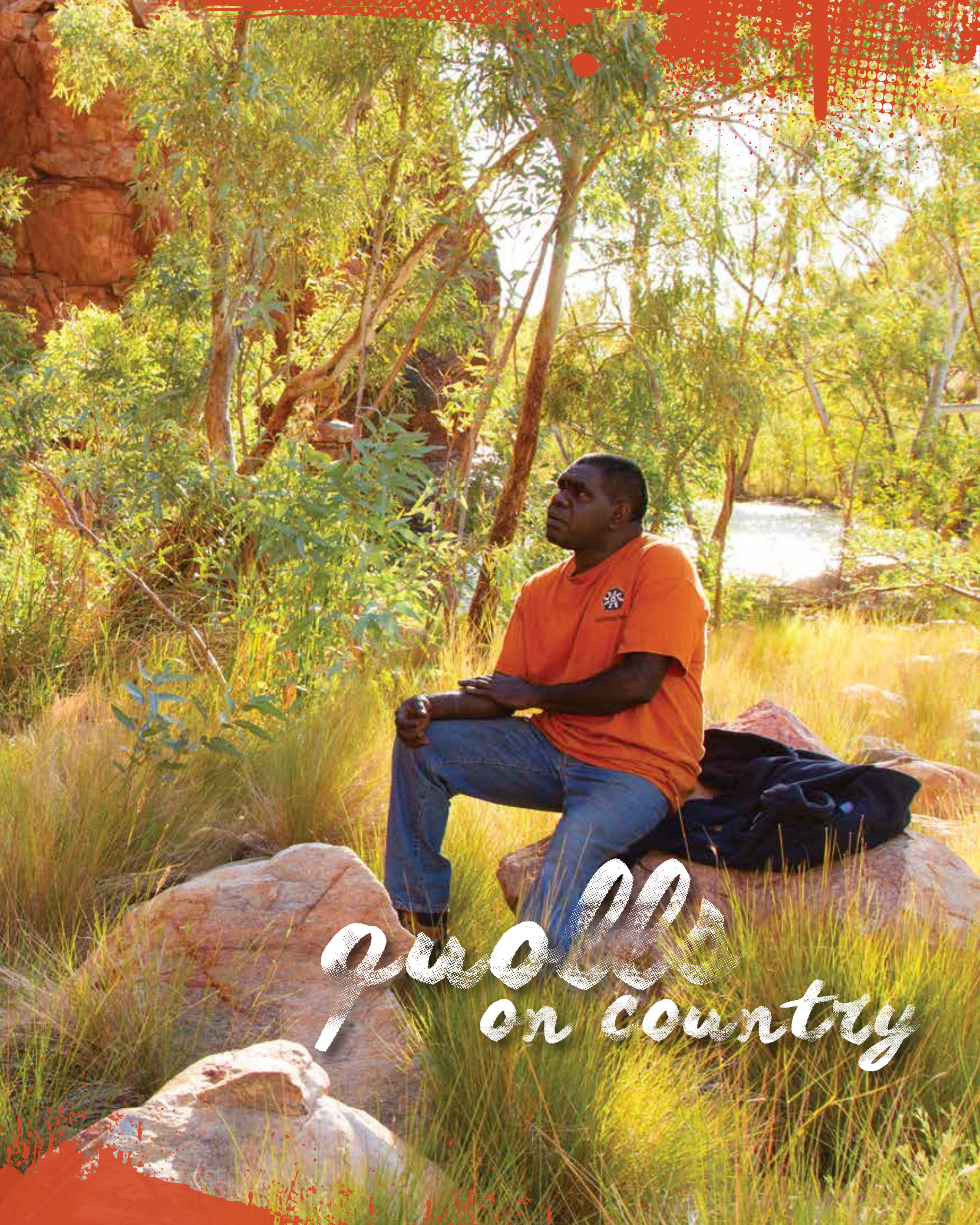


A COLLABORATIVE PROJECT
HAS UNCOVERED A NORTHERN
QUOLL IN KARLAMILI NATIONAL
PARK. THIS SPECIAL DISCOVERY IS
ADDING TO THE UNDERSTANDING
OF THIS UNIQUE SPECIES
AND PROVIDING CAUSE FOR
REFLECTION FOR THOSE WHO
REMEMBER WHEN THEY WERE
ABUNDANT IN THE AREA.

BY JUDY DUNLOP



qualls
on country

Nanjabai sits perched on a rock at the edge of a small rocky pool at the beautiful and tranquil Desert Queen Baths and tenderly strokes the soft, spotted fur of the northern quoll (*Dasyurus hallucatus*) she's holding. Then, in a simple but poignant gesture, she says "Nyaru wiminji, nyaru", which means "sorry quoll, sorry". She is expressing her sadness that this is the first 'wiminji' (as it's locally known) that she has seen here, in what is now known as Karlamilyi National Park (formerly known as Rudall River), in more than 50 years. The last time she saw quolls inhabiting the rocky hills was when she was a girl living traditionally on country with her family.



JOURNEY TO REDISCOVERY

The quoll Nanjabai is holding was captured in a small cage trap set on the side of one of the rocky pools in Desert Queen Baths. He had eaten the peanut butter and sardine bait and eyed me cautiously as I approached to remove him from the trap. After he was weighed, measured, microchipped and had a small piece of tissue taken from his ear for DNA

.....
Previous page

Main KJ Martu ranger Neil Lane at Desert Queens Bath, Karlamilyi National Park.

Photo – Judy Dunlop/Parks and Wildlife

Inset Northern quoll.

Photo – David Bettini

Above Northern quolls are characterised by their pointed faces and spotted fur.

Photo – Jiri Lochman

analysis, Martu elders and rangers from the remote communities of Punmu and Parnngurr, examined him. Nanjabai spoke in Martu about how these animals used to be "everywhere, everywhere, in all the rocky places". But this find was the first time European people have captured a northern quoll in Karlamilyi National Park.

The impetus for the search was the discovery of the existence of quolls during a fauna survey in 2012 by Jeff Turpin and Tim Gamblin from Bamford Consulting Ecologists, who were carrying out a fauna survey in the area when they came across a suspiciously quoll-like scat (which was later confirmed via DNA to be that of a quoll) in a small cave. They also captured pictures of one on a remote sensing camera that had been set in the park for 41 days.

In April 2015, I travelled to Karlamilyi National Park with some of the Kanyirninpa Jukurrpa (KJ) Martu rangers from the nearby community of Parnngurr

with hopes of trapping a quoll. Although we found a scat in a small cave, and had one more elusive animal pop up on camera, sadly, our traps were empty every morning.

Then, as part of an ongoing wider research project about quolls, which aims to better understand their ecology, population demographics and distribution throughout the Pilbara region, I had the opportunity to go back in September 2016 with the Martu rangers who were also searching for endangered black-footed rock wallabies.

AN ENIGMATIC CHARACTER


Northern quolls are the smallest of the four quoll species existing in Australia. All are nocturnal, with large eyes and ears, long tails and spotted fur. The species is of a similar size to a meerkat but with the voracity of a much larger beast and will dine on almost anything it can find, including small reptiles, mammals, roadkill, fruits, crustaceans and invertebrates.



They have an unusual life cycle where females live for up to three years, but the majority of males live for only one. Males invest so much energy in travelling to find females and fighting with other males during the breeding season that they lose body condition and eventually undergo complete immune system collapse, resulting in death in the weeks following mating. This fast-paced lifestyle is seen in some smaller marsupials such as antechinus and phascogales, but is unusual for a species of this size. Their mating strategy is thought to be a combination of a tight energy budget and vigorous sexual competition driven by a very short breeding season in females. This enables females to have litters sired by more than one male, and ensures that the offspring are healthy and strong. Other quoll species living in more mesic environments in Australia, such as chuditch, eastern or spotted-tail, live for several years and do not experience male die-off.

Evidence appears to be growing that northern quolls may have roamed more widely in the landscape before the arrival of Europeans and the entourage of new species that accompanied them. Quolls would have spent their nights hunting small rodents, reptiles and centipedes in spinifex sandplains and open grasslands with little risk of predation. Now, the presence of the European fox and feral cats in these open areas is thought to have forced quolls to stick to the safety of rocky escarpments and dense creeklines, effectively reducing their distribution in the north of WA.

Wiminji (quoll) are significant to the Martu people and form parts of stories and song lines in the area. There is some uncertainty whether the same name was used for chuditch and northern quolls (*D. geoffroi* and *D. hallucatus*, respectively), and the Pilbara is a unique location where the fossil record indicates that both species may have coexisted.



Learn more about the quoll discovered at Karlamilyi National Park

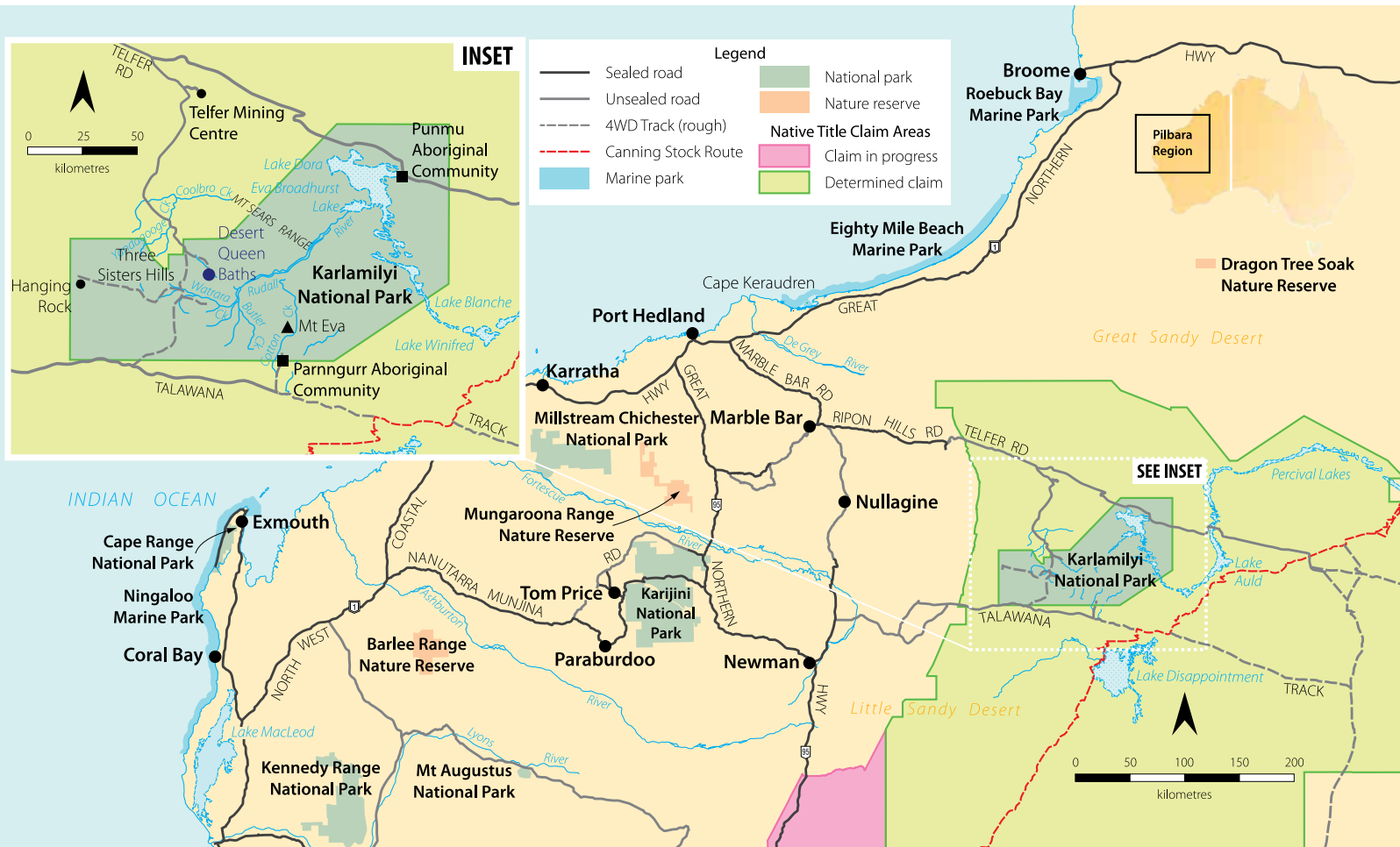
Scan this QR code or visit Parks and Wildlife's 'LANDSCOPE' playlist on YouTube.



Top left Collecting data on the animal will provide greater understanding of the species and what recovery actions are needed.

Above left Old and new euro scats were also found during the survey.
Photos – Judy Dunlop/Parks and Wildlife

Above Judy Dunlop with KJ Martu rangers (left to right) Jeremy Sammy, Neil Lane and Ashwin Biljabu examine the trapped quoll.
Photo – Alicia Whittington/Parks and Wildlife



WHO WOULD HAVE THOUGHT?

The modern extent of northern quolls in the Pilbara is from the coast west of Karratha to around Nullagine in the east. The discovery of northern quolls at Karlamilyi National Park was surprising because it is sandwiched between the Little and Great Sandy deserts – famously sandy places – rather than the complex rocky ranges that northern quolls usually rely on. The next nearest record of northern quolls is 200 kilometres west, near the town of Nullagine in the eastern Pilbara.

Analysis of the DNA from northern quolls across northern Australia has revealed several different and unique genetic populations. The species can roughly be grouped as Queensland, Northern Territory and islands, Kimberley and Pilbara. There is some degree of mixing between the Queensland, Northern Territory and Kimberley populations, but preliminary evidence indicates that the Pilbara population is completely isolated, with no records of

Right Many species of bird including the Australasian grebe occur in Karlamilyi National Park.

Opposite page

Top left The team setting a trap for black-flanked rock-wallabies in the national park.

Top right Traps were set for both wallabies (left trap) and northern quolls (right trap).

Right Nanjabai Chapman, a Martu Elder who is part of the KJ ranger team.

Photos – Judy Dunlop/Parks and Wildlife

Inset far right Cane toad.

Photo – Jiri Lochman

animals crossing the arid sandy areas between Port Hedland and Broome. So, the animal found at Karlamilyi is “out on its own”, and may therefore have travelled from the north-east or from the Pilbara, in the west. The DNA collected from this animal will be subject to DNA profiling and analysed by experts at Murdoch University to determine whether his genotype best belongs with



the Pilbara or Kimberley group.

Northern quolls are not the only threatened species inhabiting this arid region of Western Australia. Other species that are likely to inhabit the park include the greater bilby (*Macrotis lagotis*), great desert skink (*Liopholis kintorei*), mulgara (*Dasymercus* sp.), woma python (*Aspidites ramsayi*), northern marsupial mole (*Notoryctidae caurinus*)



Advancing feral threat

Cane toads pose a serious threat to quolls in Queensland, the Northern Territory and the Kimberley region of WA as ingestion of toad toxin is lethal for quolls and other frog-eating predators. The advance of cane toads across northern Australia from its first introduction point in Queensland has reduced the populations of many top order species, including goannas, freshwater crocodiles and snakes. Cane toads are currently moving at approximately 50 kilometres per year, and may colonise the Pilbara (and potentially its offshore islands) unassisted in the next 10 to 46 years. Modelling of potential habitat for the cane toad indicates that areas with permanent water, closer to the coast will be most suitable for the invasive pest. The predicted habitat of cane toads in the Pilbara almost entirely overlaps that of northern quolls, so inland populations of northern quolls such as that at Karlamilyi and island refuges protected from toads will be very important for the continued survival of northern quoll populations.



and potentially the elusive night parrot (*Pezoporus occidentalis*). Pre-European fossil remains from a nearby cave included bones from the now-extinct pig-footed bandicoot. Endangered black-flanked rock-wallabies (*Petrogale lateralis*) were recently discovered at Karlamilyi via use of remote cameras, and KJ rangers are working with Parks and Wildlife to learn more about the extent of this population. And, surprisingly,



the threatened Pilbara leaf-nosed bat (*Rhinionictis aurantia*) was also detected at Desert Queen Baths last year, a significant range extension from the rugged Pilbara to the west. Despite its vast size, there is a lack of knowledge of the species in Karlamilyi National Park. However, the partnership between Martu and Parks and Wildlife is making strides in filling the knowledge gaps.

AN ANCIENT LANDSCAPE

At 12,830 square kilometres, Karlamilyi National Park is Western Australia's largest national park, and the second largest in Australia. The Broadhurst and Throssell ranges occur on the northern margin of the park, and divide the two sandy deserts. The park is surrounded by the Martu Native Title Determination, a parcel of exclusive possession native title land. Martu are recognised as the traditional owners and occupiers of this combined area, which is more than twice the size of Tasmania. Karlamilyi River runs through the area, with many permanent pools and several areas of significance to Martu.

The Martu are among the last of Australia's Indigenous people to make contact with the European world, with many coming in from a completely traditional desert life in the 1950s and 1960s. The older Martu have stories of first contact with European civilisation and of coming into stations and missions from the desert. Old people have first-hand experience of traditional life and have extensive traditional ecological knowledge of their country. This provides an important

and time-limited opportunity to preserve and transfer this knowledge.

Back on Country, the rangers listened intently to elder Minyawwe Miller as he spoke about the land and shared stories about the quoll and other species that have vanished from the landscape since he was a boy living in this area. Then we released the quoll back into its environment and, with a final wave from Nanjabai, the quoll scampered up vertical rocks and deep into a nearby crevice. Meanwhile, I carefully stored the small vial containing DNA that would reveal some of the secrets of this lone animal and prepared to

return home knowing that this important rediscovery had been an extremely successful collaboration between traditional owners, universities, mining companies, environmental consultants, and government departments.

.....
Above Incredible geological formations abound throughout Karlamilyi National Park.
Photo – Judy Dunlop/Parks and Wildlife

Below Judy Dunlop (centre) with the KJ Martu rangers on the survey.
Photo – Tina DeGroot



Judy Dunlop is a Parks and Wildlife research scientist who specialises in working on Western Australia's threatened fauna, especially in the arid zone. She can be contacted on (08) 9405 5174 or by email (judy.dunlop@dpaw.wa.gov.au).

This project could not have been completed if not for the contribution of KJ Martu rangers, Gareth Catt and Zan King from KJ, Bamford Consulting Ecologists Jeff Turpin and Mike Bamford, Parks and Wildlife's Alicia Whittington, Cameco Australia's Tim Duff and Simon Williamson, and Murdoch University's Peter Spencer.