

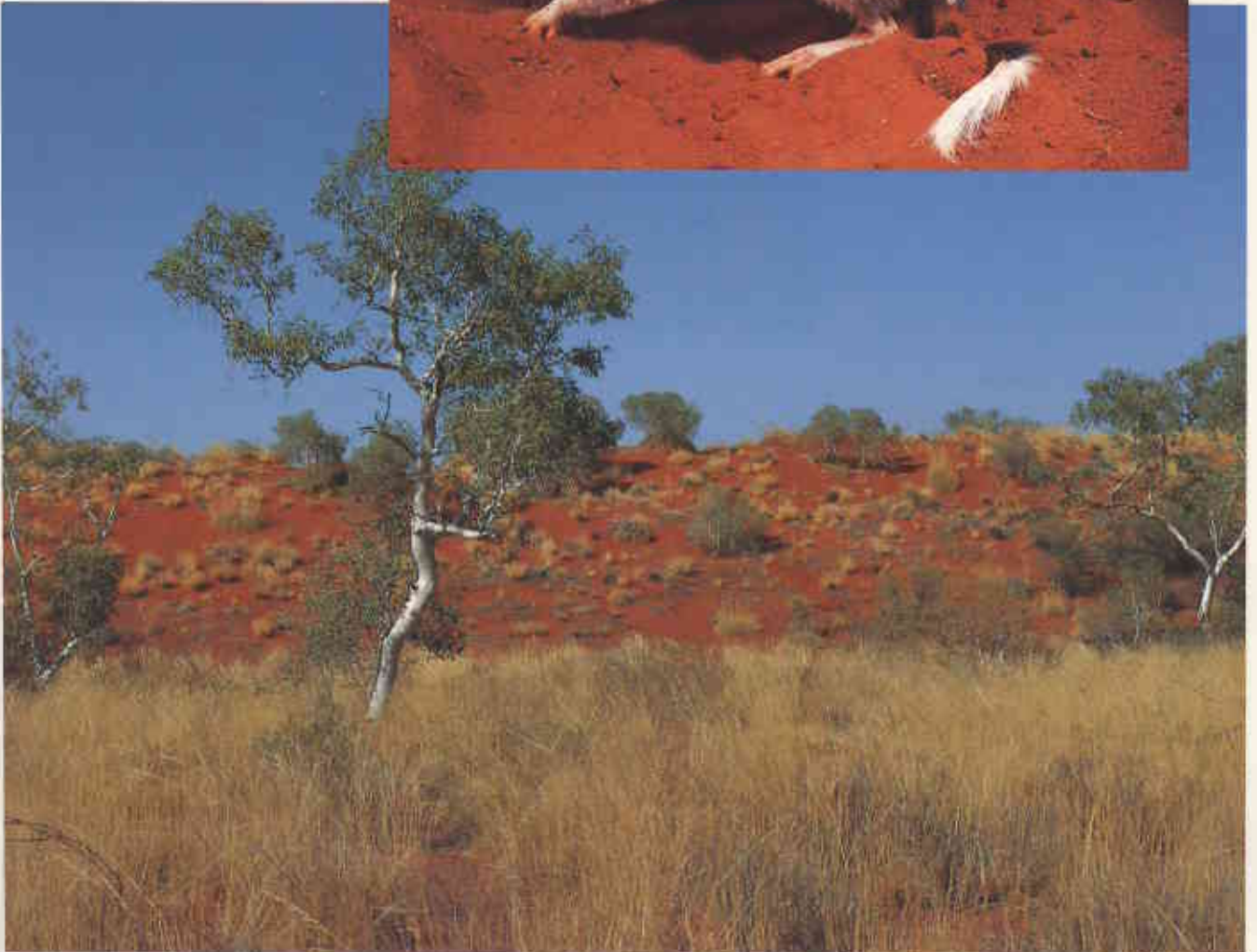
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# Magpie

*by Per Christensen  
and Graeme Liddelow*

*The ninu, better known as the dalgyte or bilby, is one of the few medium-sized mammals still found in WA's remote desert regions. Per Christensen and Graeme Liddelow came face-to-face with these hardy survivors.*



**M**ost Australian desert mammals weighing between 35 and 5 500 grams have disappeared. One exception is the animal the Aboriginal peoples of the western desert call the ninu, otherwise known as the dalgyte, bilby or rabbit-eared bandicoot (*Macrotis lagotis*). The ninu weighs between 1 and 2 kg, putting it fairly and squarely into the vulnerable group.

The ninu is one of our most attractive and endearing animals. Like the numbat, it is totally passive and doesn't attempt to scratch or bite when caught or held. It is comparatively slow-moving, has little stamina over any distance, and lives in very open country with little cover which also supports low numbers of foxes and feral cats. How does such an unlikely animal survive where others of its size class have failed?

### SURVIVAL KIT

We first located and caught a ninu in the Gibson Desert in 1988 while working on the *Desert Dreaming* project (see *LANDSCOPE*, Autumn 1990), organised by the Department of Conservation and Land Management (CALM). The animal, named Lee-Anne (after Lee-Anne Martin, our radio contact in Kalgoorlie), was fitted with a radio collar and tracked every night for a week. On the first night of tracking she introduced us to some of the features that make up her impressive survival kit. First among these were her very large ears and superb hearing. Having tracked many different animals in the south-west forests over the years, we had a good feeling for how far behind an animal you needed to be to avoid disturbing it while it went about its business. Normally about 200 metres would be sufficient if you were quiet. But with this animal, if we were closer than 300 to 400 metres she heard us and bolted down one of her numerous burrows.

This introduced us to another survival aid. The ninu has strong claws and is a very efficient burrower. In sandy soil it can disappear from sight in less than three minutes. Not bad for an animal the size of a large domestic cat! Ninu burrows go down in a steep spiral to a depth of some two metres. The steep descent and depth make it very difficult for any predator to unearth a ninu. If you attempt to dig one out it buries itself even deeper



- just ask the four CALM researchers who spent an afternoon of unsuccessful digging! Of the hundreds of burrows we have found we never once saw one that a fox had attempted to dig out. The Aboriginal people were apparently more adept at digging than us or the fox: ninu was one of their favourite foods.

The ninu digs burrows wherever it goes, and may use as many as two dozen at any one time. It always feeds close to a burrow, mostly within 100 metres or so. It may visit several burrows each night before choosing one in which to spend the daylight hours. This behaviour is confusing for anyone trying to locate a ninu, as many burrows have signs (including smell) of being occupied. We have spent many hours locating burrows to trap animals for radio-tracking

**Previous Page Inset:**  
The ninu or dalgyte (*Macrotis lagotis*).  
Photo - Babs and Bert Wells  
**Main:** Sand dune country, ninu's home in times of drought in the Gibson.  
Photo - Graeme Liddelow

**Top:**  
The long soft fur and delicate features of the ninu seem out of character with the harsh deserts it occupies.  
Photo - Wade Huges/Lochman Transperancies

**Below:**  
The individual known as Alex with CALM scientists Per Christensen and Neil Burrows.  
Photo - Ray Smith

research. Traps were set at the entrances of those burrows that appeared to be occupied, only to find the next morning that we had missed a burrow or that the ninu had come out of one which we had not trapped.



The ninu is also very patient, prepared to wait until danger has passed. On several occasions, having made no captures after two nights, we gave up and moved the traps from the burrow entrances, thinking we had been mistaken in believing there was an animal below. The following morning we would see signs of an animal having come out to feed after lying low for 48 hours.

Many burrow systems also have 'bolt holes' that come up some little distance away from the main entrance. These escape hatches are usually hidden in spinifex. We lost at least one animal before becoming aware of this little trick. No doubt predators such as foxes and feral cats, which are also common in the desert, experience similar troubles with the ninu's cunning use of its burrows. The magic of evolution!

Other aspects of the animal's biology also contribute to its success in minimising predation by foxes and cats. Ninus are largely solitary, widely dispersed and occur in low numbers, often in some of the most inhospitable parts of the desert. For example, a favourite habitat in the Gibson Desert is the lower slopes of the Young Range, and similar sites. These have very open country with shallow soils peppered with loose stones about the size and shape of small potatoes - real ankle-twisting country! Narrow strips of deeper soils, supporting mulga and spinifex, allow the ninu to dig its burrows in this barren land. Few other animals live in this

country, so foxes find it difficult to make a living and occur only in very low numbers.

## FOOD AND FIRE

Ninus' eating habits help to explain why they live a largely solitary lifestyle and are very thin on the ground. Their main food items are bulbs and insects such as termites, witchetty grubs and honeypot ants. Witchetty grubs, the larvae of some large Cossid moths, burrow in the roots of several acacia species, notably the minniritchi (*A. grasbyi*) in the Gibson Desert. The ninu digs them out, locating them by smell; or perhaps its sensitive and accurate hearing detects the chewing larvae. When the larvae are plentiful the characteristic diggings of ninu may be seen beneath acacia bushes.

The grubs are nutritious, and were once an important part of the diet of desert Aborigines. The time of the year when the pupae rise to the surface in their burrows was important to the Aborigines, since large numbers could be gathered just before they emerged without the labour of digging deeply for them.

The well-known anthropologist, Norman Tindale, who worked in the desert in the 1920s, recorded that the Pitjantjatjara people sang a song at the end of summer about this anticipated event, *Wardaruka miring tjarei*, which literally translates as 'Acacia trees pupae are carrying'.



**Top:**  
The ninu, called Lee-Anne, after being radio-collared and released.  
Photo - Graeme Liddelow

**Below:**  
Witchetty grubs are a favourite food of the ninu.  
Photo - Graeme Liddelow

**Below left:**  
Digging out a burrow - a good way to keep fit, but a fool's way to catch a ninu!  
Photo - Carolyn Thomson

**Below right:**  
A ninu burrow. They are typically better concealed in spinifex.  
Photo - Ray Smith



Bulbs of certain plant species, for example desert onion (*Cyperus bulbosus*) and desert Nancy (*Wurmbea deserticola*), are major food items. These occur mostly on sites with deep sandy soils such as sand dunes, another favourite habitat of ninu in the Gibson Desert. Termites also form a considerable part of the ninu's diet, and are more readily available after rain. Such a diet forces the ninu to adopt a pattern of shifting use of its habitat, similar to that practised by the Aborigines.

When we first started working on the ninu in May 1988, the signs of animals, their characteristic diggings and burrows, were common along the lower

slopes of the Young Range and other ranges in the area. Diggings at this time were particularly prolific under the minniritchi. In 1989 the pattern was similar. Then a three-year drought really set in and, in 1990 and 1991, numbers declined, as indicated by our monitoring plots over an area of some 600 kilometres. The remaining ninus now seem to be concentrated in the plains on the deeper sands, where they appear primarily to be eating bulbs.

We are finding that each animal uses an extensive area, but occupies only a portion of that area at any one time. The very low numbers of ninu, often in habitat carrying low numbers of other animals

and hence few foxes, work in the ninu's favour. Foxes, nevertheless, do restrict ninu numbers, though to what extent is not known. Our first ninu, Lee-Anne, was eventually taken by a fox. We located her remains on our second trip some months after we first caught her. Microscopic examination of fox scats from the Gibson Desert has also shown up ninu fur.

Let's hope that the animal's biggest problem is the periodic droughts that are very characteristic of the deserts. The ninu has long since learned to cope with natural disasters, and with its high breeding rate - it breeds throughout the year in good times - the species should be able to expand quickly to fill the empty spaces.

Fire appears not to pose any great problems to the ninu. A significant part of the animal's habitat will not burn at all, except perhaps after exceptional seasons when plant growth is especially prolific. In the plains near the sand dunes we recorded ninu diggings, and four months after burning we caught a young male (whom we named Fred) living on the bare sand at the base of one of the dunes. In May 1991 we caught yet another ninu on the burnt area, an old male we called Alex. This animal showed us yet another trick. After tracking it for several hours for eight to ten kilometres in a huge circle across the burnt sand, we found it had buried itself in the sand for the day by digging a hole and filling it in behind itself! Whether this extraordinary behaviour is unusual we do not know,

Locating a radio-collared animal using a directional aerial. The extra height gives better reception.

Photo - Ray Smith

Right:

Ninu country is harsh terrain.

Photo - Graeme Liddelow







nor do we know what the animal was doing travelling such a distance through burnt country. Perhaps it was an exploratory journey, as it only dug up and ate about a dozen bulbs on the trip.

### LAST OUTPOST

What is to become of the ninu? Is it really the survivor it appears to be? Or has it just been able to hang on longer than the other desert mammals on a steady decline towards extinction? Will the ninu once again bounce back after drought as it has done very many times in the past, or will the fox beat it? Our judgement is that the animal's solitary

ways and low numbers on the ground, its exceptionally acute hearing, its burrowing habits, together with a shifting use of its habitat and clever use of its burrow system, will win the day for the ninu. Though the animal was once widespread across much of southern Australia, its last outpost, the northern deserts, is marginal habitat for the fox. This introduced predator is on the very edge of its range in these deserts, and if the ninu is going to make a last stand it will be here, in the harsh climate to which it is so well adjusted. Adaptability, patience, and cunning - these make the ninu a truly magical mammal. ☐

Ninu burrows go down in a steep spiral to a depth of some two metres.  
Photo - Ray Smith

The two yellow markers are the location of ninu burrows, which were mapped by CALM scientists.  
Photo - Steve Dutton



Per Christensen is a Senior Principal Scientist and Graeme Liddelow is a Senior Technical Officer with CALM.



# LANDSCOPE

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You don't have to go far from Perth to enjoy the peace and quiet of the bush. The forest is right on our doorstep. See page 10.



The increase of births in captivity for cockatoos seemed promising, but was it related to the upsurge in 'birdnapping' in the wild? To Catch a Thief explains how forensic experts unravelled the mystery. See page 28.



Painted ladies, northern admirals, southern admirals and Western Australian skippers - not the stuff of a sailor's dream, but all members of the butterfly family. See page 23.



Our native animals are prey to introduced species. While baiting gives them a fighting chance, scientists are looking for more long-term, humane solutions. See page 16.



The bilby has many names, including ninu and dalgyte. Ninu Magic tells the story of this shy animal and its remarkable survival skills. See page 43.

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The red-tailed black cockatoo (*Calyptorhynchus magnificus*) is one of several cockatoos native to Western Australia. These spectacular birds nest in tree hollows and can be found in the woodlands and grasslands of the south-west of Western Australia.

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