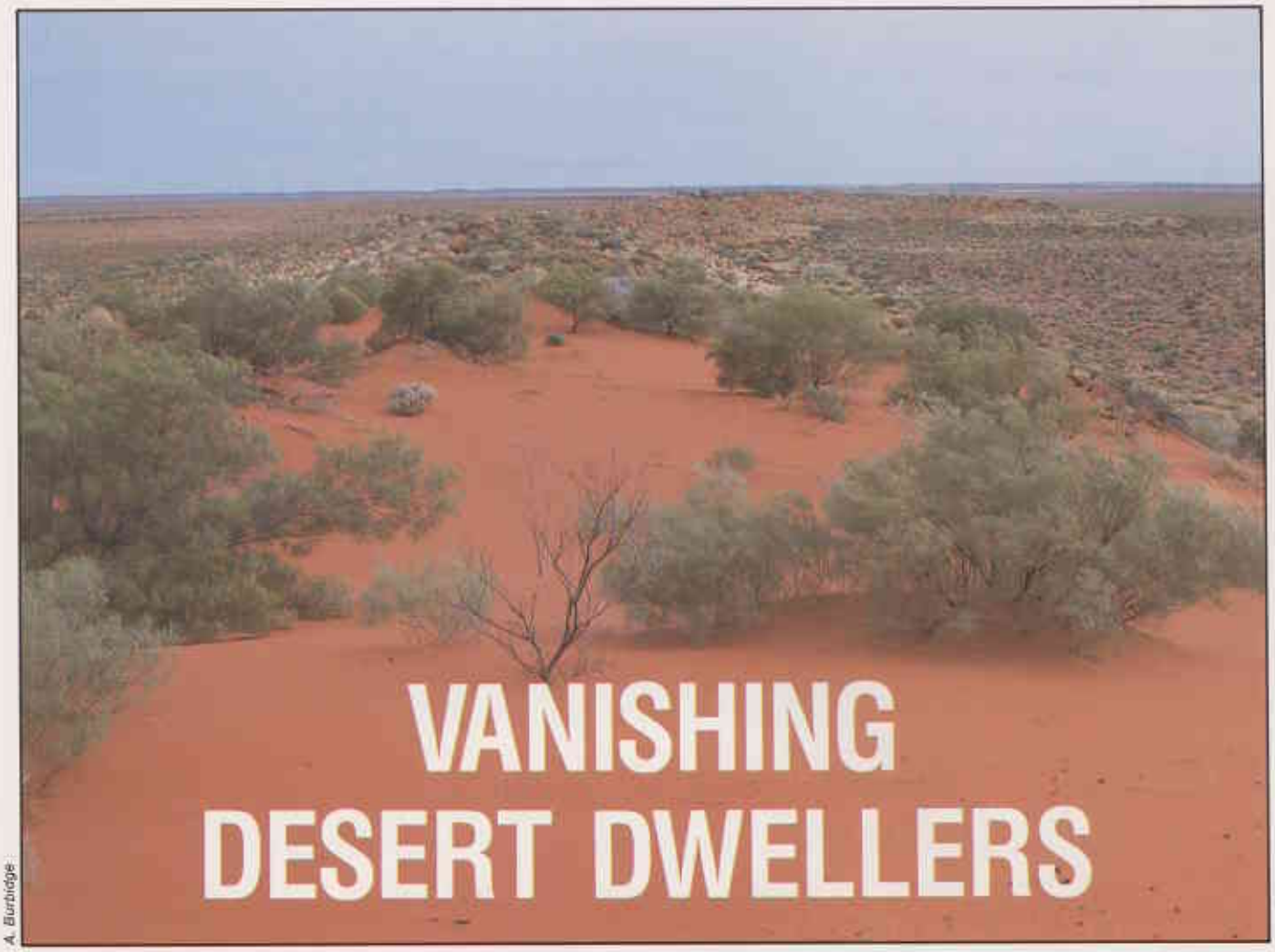


A. Burbidge

VANISHING DESERT DWELLERS

Aboriginal Knowledge of the Mammals of the Central Deserts of Australia
by
Andrew Burbidge and Phillip Fuller – CALM
and
Ken Johnson and Richard Southgate – Conservation Commission, Northern Territory.

Much has been written about the conservation problems of the well settled south-west of Australia, but little about the arid deserts of the interior. Because the deserts are largely uninhabited, people often assume they are pristine areas that still retain all their original plants and animals.

Unfortunately, remoteness has not been a barrier to change. More than one-third of the terrestrial mammal species of the central deserts of Australia have vanished during the past 50 years. Because there were no zoologists studying desert mammals at the time the decline has not been documented and the reasons for it are not understood.

Aborigines, many of whom lived traditionally in the central deserts until recently, still retain a profound knowledge of the mammals, but this knowledge, too, is fast disappearing. The authors set out to record as much as possible before it was too late, and were astounded by the amount of detailed information they learned from the people they worked with.

A. Burbidge

A scene that was repeated throughout the central deserts as we pursued Aboriginal knowledge of desert mammals.

WHERE HAVE ALL THE MAMMALS GONE?

It is now clear that the mammal fauna of the central deserts was richer and more numerous than generally believed. It is also clear that the area has suffered a massive and sudden loss of much of its mammal fauna, unparalleled in any relatively undisturbed area anywhere else in the world. Why?

Three main hypotheses have been put forward: changes in fire regimes, the effects of exotic predators and competition from exotic herbivores.

Aborigines used fire for hunting, the regeneration of food plants and signalling, as well as numerous other purposes. Fire was used in different seasons for different reasons. This left a tight mosaic of areas of different age since fire. The resultant environmental diversity favoured the desert mammals and prevented the development of extensive wildfires in summer.

As Aborigines moved to European settlements and the deserts became depopulated a 'natural' fire regime took over —one of infrequent but very extensive, hot summer wildfires, usually started by lightning. This change is thought to have had a profound effect on the mammals, depriving them of diversity of shelter and feeding areas, and leading to rapid decline and local or total extinction.

The second hypothesis suggests that indigenous mammals could not cope with exotic predators. Feral cats and foxes are now widespread and abundant in the deserts. It is not known when cats first became established, since they were present when European explorers first entered the area in the latter half of the 19th century. Most Aborigines residing in the central deserts regard cats as always having been present, and some indicated that they moved into central Australia from the west, so they may have established from 17th century shipwrecks on the west coast. Foxes entered later, becoming established in parts of the centre by the 1930s.

Two introduced herbivores are common in the interior. Rabbits entered from the south-east, first appearing in southern Northern Territory and arid W.A. in the 1890s and becoming widespread shortly afterwards. Population size has fluctuated wildly since then. Present rabbit distribution is mainly south of the Tropic of Capricorn, with pocket communities in favourable country to the north. The One-humped Camel became feral from escapes from pack animals first used in the latter half of the 19th century. They are now very abundant in the deserts.

If the decline of the various species of mammals coincided with the time that the Aborigines left their country, as we have been told, then this would support the hypothesis that changes in fire regimes are the primary factor leading to the decline of so many species from the central deserts. Cats were present for a long time without having major effect. Foxes did not become established in some areas, especially in the northern deserts, until after the mammals had gone, and it is clear that in much of the northern half of the area rabbits were never common except in particular habitats, and none of the indigenous species were restricted to these. Camels have had little effect on the widespread spinifex grasslands.

Although foxes may not have been the primary cause of the extinctions or declines, they do have a profound effect on remaining small populations. Work on Rock-wallabies and Numbats in the south-west of W.A. has clearly demonstrated that foxes will have to be controlled if these species are to survive and reintroductions are to be successful.

It seems likely, therefore, that changes in burning patterns caused the major decline in the desert mammals, and the introduced predators then finished off most of the remaining pocket populations.

During 1982-1985 we visited many Aboriginal communities throughout Australia's central deserts seeking information about desert mammals. We talked to groups of old people, showing them mammal skins, asking questions, taking notes. Interpreters were a great help, but often none were available so we made do with a combination of their English and our limited but growing knowledge of key words in Aboriginal dialects. Sometimes we were aided by younger Aborigines who had a good command of English. It took a while to learn what questions to ask.

One day in July, 1983, two of us were showing a number of mammal skins to two people at Warburton. When all the different skins had been spread out on a hessian bag, a Ngaanyatjarra man said, 'But you haven't got the Kuluwarri there.' The Kuluwarri? This was our first clue that the enigmatic Central Hare-Wallaby, known to science from only a single skull collected by the explorer Michael Terry near Lake Mackay in 1931, had once actually lived in W.A.

What else did we know about desert mammals from Europeans? Several of the early explorers — e.g. Ernest Giles — kept records of the animals they saw, but their records of the smaller mammals are often of little value because it is difficult to work out what species they were describing.

The most notable of the early biologists was Baldwin Spencer who accompanied the Horn Expedition which worked near Alice Springs in 1894. Spencer, who only visited the eastern edge of our study area, noted:

that the Common Brush-tail Possum was 'ubiquitous' and 'everywhere amongst the eucalypts which border the river beds' (now possums are almost extinct in the deserts);

that the Dalgyte, or Greater Bilby, must have been extremely common, judging by the number of tail tips worn as decoration by Aborigines (now the Dalgyte has disappeared from over half its former range);

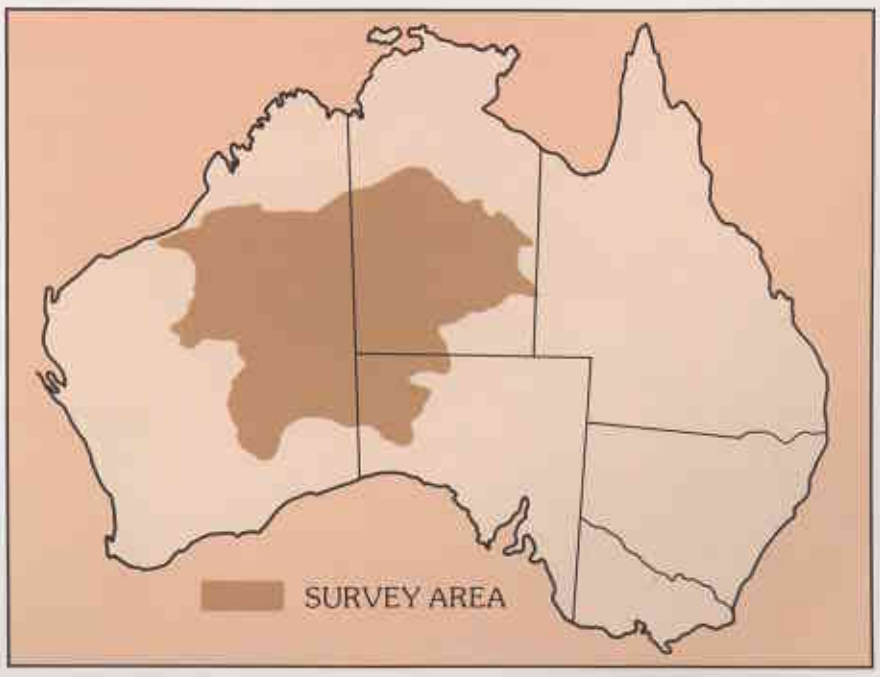
the difficulty in acquiring specimens of the Lesser Stick-nest Rat, which led to the comment that it was evidently a rare form (now they are extinct on the mainland);

the apparent ease in acquiring specimens of the Spectacled Hare-wallaby along the Macdonnell Ranges and the comment that it was '. . . far from uncommon' (now Spectacled Hare-wallabies have disappeared from the Macdonnells and all the southern parts of their former range).

H.H. Finlayson of Adelaide was the first one to hit upon the idea of using museum specimens to obtain information from Aborigines. Between 1931 and 1935 he conducted a series of expeditions through central Australia as far west as the Rawlinson Range, near today's weather station at Giles. He learned a considerable amount from desert Aborigines, for example, although there are no specimens of the Woylie (or Brush-tailed Bettong) from central Australia, he collected ample verbal testimony of its presence.

During a subsequent expedition 20 years later he became alarmed because so many species had declined: Dalgytes that were once common in the Docker River area were absent or exceedingly rare; Possums and Boodies (or Burrowing Bettongs) had also become very rare. Nevertheless, he held out hope that the various species might persist in the remote desert regions beyond the influence of Europeans, their livestock and the introduced Red Fox.

Recent surveys by staff of the Department of Conservation and Land Management and the Conservation Commission have shown that the



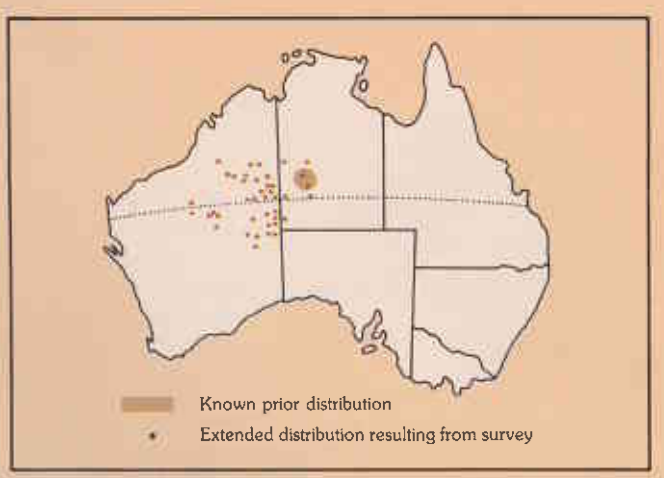
The Central Desert Survey Area

CASE STUDY ONE — **THE CENTRAL HARE-WALLABY**

The animal we assume was the Central Hare-wallaby was described as: fur soft, long and grey (colour similar to Boodie or Dalgyte), long hair on top of the feet, extending to the ground (some said this made the tracks less distinct), tail relatively short and thickened, a small wallaby similar in size to the Boodie, hopped 'like a kangaroo', had a single joey. Many people referred to it as the 'quiet one' or 'deaf one' or sometimes 'stupid one' because it did not flush from its shelter. It was hunted by being tracked to its hide and speared. Sometimes it could be caught in its hide by hand. The fur was spun to make belts.

The animal described was found in sandplains and dunes vegetated with spinifex, and it sheltered in a scrape under a spinifex hummock. Some people said it sometimes dug a short burrow like the Rufous Hare-wallaby does in summer; several said it made a grass-lined nest. It fed on grass (including spinifex), leaves and seeds as well as quandong fruit. It disappeared between 25 and 45 years ago, earlier in the south. In the Tanami Desert it was present at least until the late 1940s and at Kiwirrkurra and Warla Warla (Pollock Hills) in the southern Great Sandy Desert it was still present in 1960.

Aboriginal names for the Central Hare-wallaby:
Kartutjarra: kalanpa/kananpa, pungkurrpa, ruputji;
Kukatja: kalanpa, kuluwarri, tjuntatarrka, yamari;
Mangala: kalanpa, pukurl-pukurl?;
Manytjilytjarra: kalanpa/kananpa, pungkurrpa, raputji;
Ngaanyatjarra: kuluwarri;
Ngaatjatjarra: kuluwarri;
Pintupi: kulkuma, kuluwarri, pilakarratja, tjinapawulpa, tjuntatarrka, warrkuntilpa, yamarri;
Pitjantjatjarra: kuluwarri;
Walmatjari: pukurl-pukurl?;
Wangkatjungka: kalanpa, kuluwarri, tjuntatarrka, yamari;
Warlpiri: kulkuma, natjwayi, yamari/yamarri.



CENTRAL HARE-WALLABY *Lagorchestes asomatus*

The Pig- Footed Bandicoot (right)

mammal fauna has been seriously depleted and little opportunity remains to document the distribution and ecology of many species.

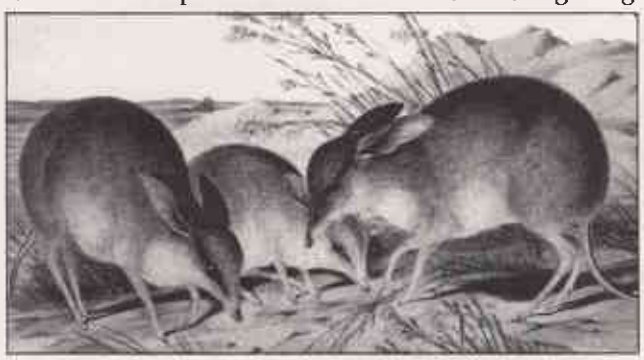
Ten desert mammal species are extinct, others remain in remnant populations in the arid zone, in better watered regions at the periphery of their former range, or on offshore islands. The conservation of these remaining species is imperative. Their chances would be greatly improved if they could be rehabilitated in, or re-introduced to, at least parts of their former range. Before this can be done we need to know much more about desert mammals and understand the reasons for their disappearance.

To Aborigines living in the desert during the decline, the mammals were a source of food and an integral part of their culture. Talking with elderly Aborigines still living in the deserts is one of the best ways of gaining information about desert mammals. This task was urgent because too often the knowledge of the old people dies with them.

Care must be taken when recording Aboriginal names, because of the number of consonant sounds unfamiliar to speakers of Australian English. The difference between 'r' (as in rally) and 'rr' (which is similar to the Scottish rolled r) is obvious to an Aborigine, but not to most Australians of European origin. For example, in a number of dialects 'waru' is fire, but 'warru' is the Black-footed Rock-wallaby. The differences between 'l', 'rl' and 'ly' (which all sound like 'l' to most English speakers) are also clear to Aborigines, but cannot so easily be described.

Despite the difficulties attendant on language differences, we learned an enormous amount. In particular, information given by our Aboriginal informants enabled us to significantly extend the known range of the Chuditch (or Western Native-cat), the Golden Bandicoot, the Desert Bandicoot, the Pig-footed Bandicoot, the Lesser Bilby, the Common Brushtail Possum, the Woylie, the Spectacled Hare-wallaby, the Desert Hare-wallaby and the Crescent Nailtail Wallaby. The information also added significantly to the current knowledge of the biology of many species. The most spectacular example is the Central Hare-wallaby mentioned earlier, but there are many others.

When the study began, there was hope that Aborigines might be able to tell us that some 'extinct' species still existed in their remote home-lands. That hope was unfounded. Even more galling



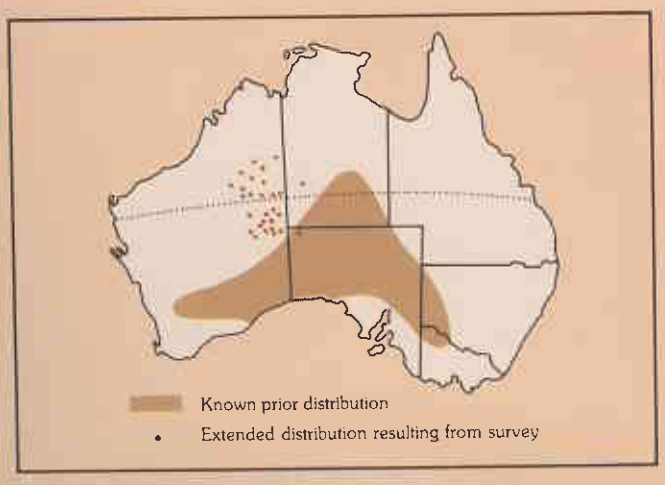
CASE STUDY TWO — THE PIG-FOOTED BANDICOOT

The Pig-footed Bandicoot is known in W.A. from one specimen only, collected near Northam, during the 19th century. The most recent specimens were collected at Lake Eyre North in 1907, although one from Alice Springs was donated by Baldwin Spencer to the National Museum of Victoria in 1916. While the fossil record suggests a wider distribution in the past, modern data have been interpreted as indicating that the species was uncommon and that it had become extinct early in the 20th century.

Now we know that it was widespread in the northern parts of the central deserts, and remained a common part of the fauna in some places until the 1940s or 1950s. Pig-footed Bandicoots were found in sandplain and dune areas vegetated with tussock grass and spinifex. They lived in a grass-lined nest in a scrape (sometimes referred to as a 'bough shed' — an allusion to a temporary shelter built by Aborigines); a few people said the bandicoots dug a short, straight burrow with a nest at the end. They ate termites and ants, including honey-pot ants. Pig-footed Bandicoots did not scamper or hop, but actually ran so fast a person could not catch them. When chased by dogs they would often run into a hollow log.

The Pig-footed Bandicoot disappeared a long time ago in the south, probably about 60 or 70 years ago in South Australia, but it was better known in the north; Pintupi people, from the southern Great Sandy Desert and the northern Gibson Desert, know it well and said it was still around 30 years ago in their country. In the Tanami Desert, only Walpiri people in their 60s and 70s can recall seeing it.

Aboriginal names for the Pig-footed Bandicoot:
Kartutjarra: kanytjilpa;
Kukatja: kalatawurru, parrtiriya, takanpa;
Mangala: kalatawirri;
Manytjilytjarra: kanytjilpa;
Ngaanyatjarra: kanytjilpa;
Ngaanjatjarra: kanytjilpa;
Pintupi: kanytjilpa, marakutju, takanpa;
Pitjantjatjarra: kanytjilpa;
Walmatjari: kalatawirri;
Wangkatjungka: kantjilpa(?), marakutju;
Waripiri: takanpa, yirratji.



PIG-FOOTED BANDICOOT *Chaeropus ecaudatus*

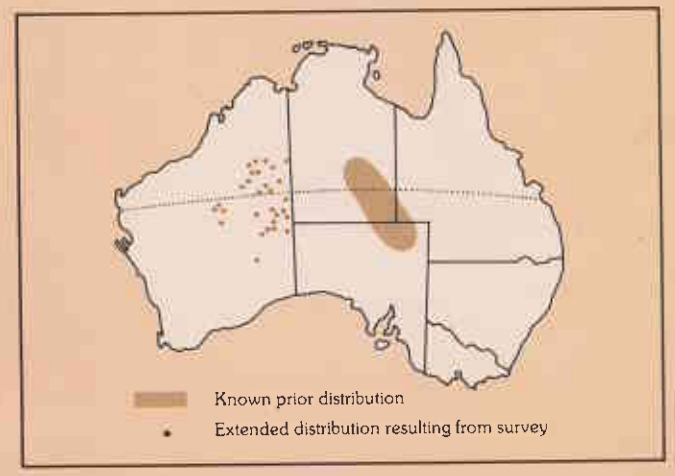
CASE STUDY THREE — THE LESSER BILBY

The Lesser Bilby was known only from the Simpson Desert and adjacent areas, and has never previously been recorded in W.A. There are no records of live specimens since Finlayson's from the Lower Diamantina of South Australia in 1931. Evidently, the species had a much wider arid zone distribution than was thought, and survived in the northern Gibson Desert and parts of the Great Sandy Desert until the 1950s.

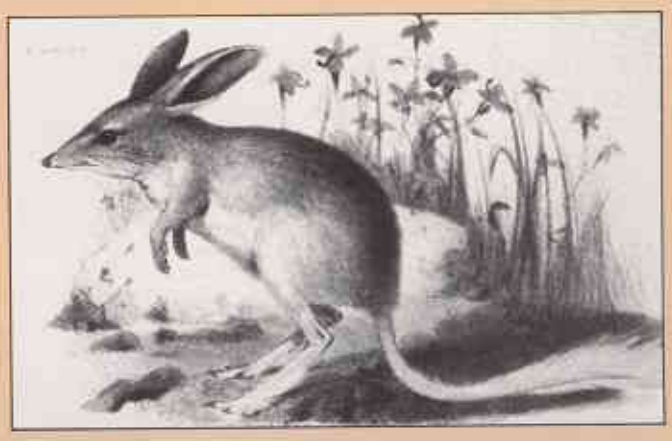
It lived in dunes and sandplains with spinifex, sometimes with mulga and/or tussock grass. It sheltered in a deep burrow which descended in a spiral with no nesting material at the end. Its food was termites, ants and roots.

It disappeared between 20 and 60 years ago, earlier in the south and later in the north. It was present in the northern Gibson Desert as recently as 20 years ago.

Aboriginal names for the Lesser Bilby:
Kartutjarra: natukutiri/ngatukutiri/nutukutiri, ngatukutita, tjunpi;
Kukatja: natukutiri/ngatukutiri, tjunpi;
Manytjilytjarra: natukutiri/ngatukutiri, ngatukutita, tjunpi;
Ngaanyatjarra: tjunpi;
Ngaatjatjarra: tjunpi, nyunpi;
Pintupi: nantakarra, nyunpi/nyumpi, tjunpi;
Putitjarra: natukutiri/ngatukutiri;
Walmatjari: wingnyil;
Wangkatjungka: nantakarra/parntakarra, ngatukulirra, nyunpi, wingnyil;
Warlpiri: nantakarra.



LESSER BILBY *Macrotis leucura*



The Lesser Bilby.

was the realization that many of the extinct species were still around in the 1940s and 1950s. If the conservation of desert mammals had been studied just a few years earlier the number of extinct species might have been much less than it is today.

In most cases, species that have declined or become extinct disappeared first from the south of the study area and later in the north. This pattern relates to the movement of Aborigines from their traditional lands to European settlements. When asked, the Aborigines consistently stated that mammals were present in a particular area up to the time that most people abandoned their nomadic lifestyle.

The dramatic loss of species is not only of concern to scientists and conservationists; it is shared by the Aboriginal people. Many 'new' Australians have a concept of Aborigines being interested in the fauna only to the extent that it provided food. This is not the case. Aborigines have a strong interest in the mammals, seeing them as an important and integral part of the whole environment. They are greatly saddened by the disappearance of the culturally important species, and are keen to see them rehabilitated. The 'increase' ceremonies that are passed down from generation to generation are a manifestation of this attitude. Often Aborigines blamed themselves for the disappearance of a species because they ceased to perform the relevant ceremonies when they left their traditional lands for European missions or settlements.

The information given to us has already resulted in new wildlife conservation initiatives. In the Northern Territory and W.A. research is now being carried out into Aboriginal knowledge concerning the use of fire, and how we can adopt and adapt their methods to manage national parks and nature reserves. Experimental reintroductions of desert mammals have started in the Northern Territory and are planned for W.A. In addition, research has started into methods of controlling foxes over wide areas, so that remnant populations of native mammals can be protected and reintroductions have a greater chance of success.

There are conservation problems in the central deserts, just as there are in other parts of Australia. The solving of problems in the deserts should be much simpler because there are fewer inhabitants and the environment is simpler. The solutions will be much easier if desert Aborigines and Government authorities work together towards common goals — the rehabilitation of desert lands and their fauna. □

Mulgara *(Dasycercus cristicauda)* with joeys.

Jiri Lochman

Andrew Burbidge

Boodie or Burrowing Bettong *(Bettongia lesueur)*

LANDSCOPE

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COVER PHOTO
Shipwreck at Broome (Jiri Lochman).

EDITORIAL

For more than 100 years W.A. has recognised the importance of protecting significant areas of its natural heritage.

Today, about 4.5 million hectares of our State is classified as national parks, vibrant natural museums ranging from the hardwood forests of the south-west to vast inland deserts that represent our unique terrestrial flora and fauna.

Until now, however, there has been a missing element: the marine environment.

Clearly, its absence has made our park system less representative of W.A.'s environment, especially considering that the State has some 12700 km of coastline.

Recently a start was made to address this imbalance with the official opening of the Marmion Marine Park, W.A.'s first marine park.

The primary objective in establishing this park, which is located on metropolitan Perth's doorstep, is to conserve significant examples of our marine heritage, and to encourage public understanding, appreciation and continued enjoyment of the marine environment in ways which will leave it unimpaired for future generations.

These same values apply to the proposed Ningaloo Marine Park which is situated along 260 km of the State's coastline south of Exmouth. Ningaloo will be vested in the National Parks and Nature Conservation Authority as a marine park in July.

Both of these marine parks not only allow for the development of proper management techniques to protect the marine environment, but also to enhance recreation.

Marmion reef has long been a popular holiday destination for many Western Australians who fished for the huge groper and crayfish offshore, and swam in the protected lagoons.

Ningaloo might be less well known because of its isolation, but the tourist industry is expected to promote this area of our coastline and the adjacent Cape Range National Park and, as a consequence, it will become one of the State's premier tourist attractions.

The establishing of marine parks will provide many benefits.

Some intangible, such as the knowledge that future generations will be able to appreciate areas of unspoiled natural beauty.

Others more tangible, such as the enjoyment of visiting a marine park.

There will also be benefits in terms of jobs created and the expansion of a growing and viable tourist industry.

Furthermore, marine parks will provide ecological benchmarks for research into natural processes and into the relative effects of marine and coastal uses.

W.A. has a responsibility to protect special marine environments and to encourage public appreciation of these areas now and in the future.

Our marine parks will do this.