

AUSTRALIA'S THREATENED MAMMALS

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The following notes were prepared as a result of a request by the Survival Service Commission of the International Union for the Conservation of Nature for up-to-date information on the threatened mammals of Australia. It is emphasized that this report is of an interim nature only, and it is hoped that it will be followed up by an enlarged documented account in the near future.

The only recent review of the endangered Australian mammals is that contained in Harper's "Extinct and Vanishing Mammals of the Old World".* Many of the mammals listed there are not at present in danger and the following should be deleted from Harper's endangered list :

Brush-tailed phascogale	<i>Phascogale tapoatafa</i> (Meyer)
Pouched mouse	<i>Sminthopsis m. murina</i> (Waterhouse)
	<i>Sminthopsis m. fuliginosa</i> (Gould)
Tiger cat	<i>Dasyurus m. maculatus</i> (Kerr)
Tasmanian devil	<i>Sarcophilus harrisii</i> (Boitard)
Banded anteater	<i>Myrmecobius f. fasciatus</i> Waterhouse
Gunn's bandicoot	<i>Perameles gunnii</i> Gray
Honey mouse	<i>Tarsipes spenserae</i> Gray
Koala	<i>Phascolarctos cinereus</i> (Goldfuss)
Red-necked pademelon	<i>Thylogale thetis</i> (Lesson)
Tasmanian wallaby	<i>T. billardieri</i> (Desmarest)
Dama wallaby	<i>Protemnodon eugenii</i> Desmarest
Parry's wallaby	<i>P. parryi</i> (Bennett)
Western brush wallaby	<i>P. irma</i> (Jourdan)

The koala is definitely on the increase at the present time : it has been saved by a keen public interest and, in Victoria, by an active management programme.

The geographical ranges of practically all Australian mammals have shrunk, sometimes drastically, since European occupation. This was only to be expected, however, and in a great many cases the shrinkage was inevitable. It should also be borne in mind that the decline in the Australian mammal fauna cannot be attributed solely to human interference, agricultural and

* "Extinct and Vanishing Mammals of the Old World." American Committee for International Wild Life Protection, New York.

pastoral development and the introduction of eutherian competitors and predators. There is evidence that some mammals were on the way out due to long-term environmental change before Europeans occupied this country. Gilbert's rat-kangaroo *Potorous gilberti* (Gould), Broad-faced rat-kangaroo *P. platyops* (Gould) and Broad-toothed rat *Mastacomys fuscus* Thomas are examples.

The compilation of a full list of Australian mammals which are in danger of extermination presents a very difficult problem. In the first place, in many cases there is no general agreement on the taxonomic limits of the various forms or on their nomenclature. Revisions of practically all groups are long overdue. Secondly, there are many species restricted to remote country which are known only from odd specimens. Their status cannot even be guessed at. Careful exploration of remote areas would no doubt bring to light hitherto unknown forms; and we know of recently collected specimens of undescribed forms, including full species. Another point is that some small members of the inland fauna suffer extraordinary fluctuations in numbers. In some years they are extremely abundant and in others scarcely a specimen can be found. Examples are Crest-tailed pouched mouse *Dasycercus cristicauda* (Krefft), Fat-tailed pouched mouse *Sminthopsis crassicaudata* (Gould), *Pseudomys minnie* Troughton and Long-haired rat *Rattus villosissimus* (Waite).

The need for more and better faunal surveys is now well recognized in interested quarters. Outside of south-eastern and south-western Australia and Tasmania there is very little precise information on the distribution and relative abundance of the mammals; and with a few exceptions, information on the habits and biology of Australian mammals is sadly lacking. In our present state of knowledge, and bearing the above points in mind, the following list of endangered species is probably the best that can be drawn up.

ENDANGERED MARSUPIALS

Western yellow-footed marsupial-mouse *Antechinus flavipes leucogaster* (Gray). [This south-western race is probably extinct. The eastern States races are not in danger.]

Southern planigale *Planigale tenuirostris* Troughton.

Little planigale *P. subtilissima* (Lonnberg).

Red-tailed phascogale *Phascogale calura* Gould.

Long-tailed marsupial-mouse *Sminthopsis longicaudata* Spencer. [Known from two recorded specimens.]

Eastern jerboa-marsupial *Antechinomys laniger* (Gould).

Eastern native cat *Dasyurus quoll* (Zimmermann). [Common and in no danger in Tasmania, but reduced to remnant pockets on mainland.]

- Western native cat *D.g. geoffroyi* Gould. [Possibly extinct. The south-western race *D.g. fortis* Thomas is holding its own well.]
- Tasmanian tiger *Thylacinus cynocephalus* (Harris).
- Eastern banded anteater *Myrmecobius fasciatus rufus* Wood Jones. [The south-western nominate race is holding its own well.]
- Eastern barred bandicoot *Perameles fasciata* Gray. [Long extinct in N.S.W., but there are said to be surviving colonies in Victoria.]
- Western barred bandicoots *Perameles b. bougainvillei* Quoy and Gaimard, *P. b. notina* Thomas. [*P. b. myosura* Wagner appears to be extinct.]
- Rabbit-bandicoot *Thylacomys lagotis* Reid. [All races. Some races are apparently extinct.]
- Lesser rabbit-bandicoot *T. leucura* (Thomas).
- Pig-footed bandicoot *Chaeropus ecaudatus* (Ogilby).
- Cape York bandicoot *Echymipera rufescens australis* Tate. [Described in 1948 from a single specimen which represents the only occurrence of this typically New Guinea genus in Australia.]
- Western ringtail *Pseudocheirus occidentalis* Thomas.
- Scaly-tailed possum *Wyulda squamicaudata* Alexander. [Known from three adult specimens and one pouch young.]
- Grey cuscus *Phalanger orientalis peninsulae* Tate. [Doubtfully included. May not be rare but described as recently as 1945, and restricted to Cape York Peninsula.]
- Island wombat *Phascolomis u. ursinus* (Shaw).
- Hairy-nosed wombat *Lasiorchinus latifrons* (Owen).
- Musk rat-kangaroo *Hypsiprymnodon moschatus* Ramsay. [This species is doubtfully included. It has always had a fairly limited geographical range but apparently persists well there.]
- Brush-tailed rat-kangaroo *Bettongia penicillata* Gray, all races.
- Lesueur's rat-kangaroo *B. lesueuri* (Quoy and Gaimard) all races.
- Tasmanian rat-kangaroo *B. cuniculus* (Ogilby).
- Rufous rat-kangaroo *Aepyprymnus rufescens* (Gray). [This species has disappeared from most of its range but may persist well in Queensland.]
- Plain rat-kangaroo *Caloprymnus campestris* (Gould).
- Potoroo *Potorous t. tridactylus* (Kerr). [The Tasmanian race *P. t. apicalis* (Gould) is common and not in danger.]
- Banded hare-wallaby *Lagostrophus fasciatus* (Peron and Lesueur).
- Western hare-wallaby *Lagorchestes hirsutus* Gould.
- Yellow-footed rock-wallaby *Petrogale xanthopus* Gray.
- Rock-wallabies. [Most or all of the other forms of *Petrogale* seem to be races of the one species *P. penicillata* (Griffith, Smith and Pidgeon). The range of the nominate race is very much reduced but little information is available on most of the others. *P. p. hacketti* Thomas is an island form and is still abundant on these islands, although they are of limited area.]
- Bridled nail-tail wallaby *Onychogalea frenata* (Gould).
- Crescent nail-tail wallaby *O. lunata* (Gould).
- Parma wallaby *Protemnodon parma* (Waterhouse).

ENDANGERED RODENTS

The endemic Murids have suffered as badly as the marsupials. They have been studied much less than the marsupials and their taxonomy is rather confused. At the moment one can only say

that most or all of the members of the following genera are endangered :

Xeromys. The single species *myoides* Thomas is known from six specimens.

Pseudomys. All species are in danger except *higginsii* (Trouessart) of Tasmania and *minnie* Troughton of the inland. Some forms are certainly extinct.

Thetomys. One form is certainly extinct (*nanus* (Gould)), another may be.

Leggadina. An inland genus about which little is known but most forms appear to be endangered, an exception being *hermannsburgensis* (Waite).

Gyomys. One or two species seem to be in no danger, although much reduced in range.

Mastacomys. The single species is a relict surviving in isolated places in Tasmania, Victoria and Mt. Kosciusko. It was widespread (as evidenced by cave fossils) in the geologically Recent, but prior to European occupation.

Laomys.

Zyzomys.

Conilurus. *C. albipes* (Lichtenstein) is extinct.

Leporillus. *L. apicalis* (Gould) is almost certainly extinct.

Notomys. Some forms are endangered, and some are doubtless extinct.

However, a few seem to be doing well.

The majority of forms of *Hydromys*, *Rattus*, *Melomys* and *Uromys* are not in danger of extermination.

CHIROPTERA and MONOTREMATA

We know that most species of bats are definitely not in danger, and it is impossible to cite any that are : but little is known about some of the tropical forms.

Australia has three monotremes—the duck-billed platypus (*Ornithorhynchus anatinus* (Shaw)) and two species of spiny anteater (*Tachyglossus*), one confined to the island State of Tasmania. None of these three forms is in danger.

EXTINCT MARSUPIALS

To complete the survey is a list of full species of marsupials which are certainly, or almost certainly, extinct :

Freckled marsupial mouse *Antechinus apicalis* (Gray).

Leadbeater's possum *Gymnobelideus leadbeateri* McCoy.

Gaimard's bettongia *Bettongia gaimardi* (Desmarest). [This is possibly only subspecifically distinct from *penicillata*, but there are probably not enough *gaimardi* specimens in existence to prove it.]

Broad-faced rat-kangaroo *Potorous platyops* (Gould).

Gilbert's rat-kangaroo *P. gilberti* (Gould).

Brown hare-wallaby *Lagorchestes leporides* (Gould).

Toolache wallaby *Protemnodon grayi* (Waterhouse).

CONCLUSION

In compiling the list of endangered species some inland and northern forms of marsupials present a problem, for nothing is known of their present status beyond the fact that they are still in existence. Examples are the Spectacled hare-wallaby *Lagorchestes conspicillatus* Gould and its subspecies, Northern nail-tailed wallaby *Onychogalea unguifer* (Gould), etc. It is conceivable that they are still widely distributed in satisfactory numbers.

Other species that are difficult to classify from the Survival Service viewpoint are those which are still abundant and thriving on islands, but which are reduced to remnants or are extinct on the mainland. An example is the quokka *Setonix brachyurus* (Quoy and Gaimard), which is abundant on two islands off Western Australia, the largest of which has an area of 4,700 acres, but is reduced to a few remnant colonies on the mainland. Perhaps this species should be considered in danger. Some forms have always been restricted to islands or groups of islands of limited area.

Another species that we found difficult to classify is the hairy-nosed wombat *Lasiorhinus latifrons* (Owen). Within historical times this species has existed from the Western Australian border in a broad but apparently discontinuous arc through inland South Australia, New South Wales, up to inland central Queensland. To-day it occurs only in South Australia—on the Nullarbor Plain around the head of the Great Australian Bight, and in a few other isolated areas over to the Murray River. This is only a remnant of its former distribution; yet it hangs on tenaciously in these areas in spite of persecution. Over much of its present range it is unprotected because of the damage it does to group-proof fences.

The preparation of the Australian contribution to the formal "Endangered Species List" (comprising endangered species which "could probably be saved from extermination if a special effort were made on their behalf") is an even more difficult task than compiling the complete list of endangered forms, given above. If one deletes from the full list the species occurring in remote and unsettled, or virtually unsettled, country, and others whose range and status are inadequately known, we are left with the following eleven forms, the natural habitat of all of which is in country long settled and well known, and all of which are known to have surviving colonies in such country:

- Red-tailed phascogale *Phascogale calura*.
- Eastern jerboa-marsupial *Antechinomys laniger*.
- Southern planigale *Planigale tenuirostris*.

Eastern native cat *Dasyurus quoll* (on mainland but not Tasmania).
 Thylacine *Thylacinus cynocephalus*.
 Western ringtail *Pseudocheirus occidentalis*.
 Hairy-nosed wombat *Lasiorhinus latifrons*.
 Island wombat *Phascodomis u. urstinus*.
 Brush-tailed rat-kangaroo *Bettongia penicillata*.
 Potoroo *Potorous t. tridactylus*.
 Broad-toothed rat *Mastacomys fuscus*.

With the exception of the thylacine and the two wombats, all the species on this list are small, nocturnal and usually rather cryptic forms. As such they are virtually immune from direct human interference and persecution, though their security could be affected by the reduction of favourable habitat due to changed or intensified land use. As they are seldom seen, they do not excite the protective interest of the general public as do birds, and marsupials like the kangaroos and the koala; and in practice the only hope of being able to assist their survival would be to try to ensure that some of the habitat in which they still occurred was included in reserves or national parks established or maintained primarily for other purposes.

Although this report may appear to present a rather grim outlook, it should be emphasized that there is another and more encouraging side to the picture. The Fauna Authorities in the various Australian States are continually endeavouring to obtain more wildlife reserves, and every year sees new reserves and sanctuaries gazetted. Also in recent years interest in conservation has stepped up enormously, and more and more professional biologists have become actively interested in the native fauna. In this connection the recent establishment of the Australian Mammal Society, which aims to encourage research on and the conservation of native mammals, should prove quite a significant event. Because of these developments, the much-needed information from biological and ecological studies and fauna surveys, on which a sound conservation policy could be based, is likely to accumulate at an accelerated rate.