

Tropical Topics

An interpretive newsletter for the tourism industry



Declining mammals of the savannas

No. 75 October 2002

Notes from the Editor

In *Tropical Topics* 73 we looked at the problems facing seed-eating birds in the savannas and the fact that many of them were in trouble. Unfortunately they are not the only animal group in difficulty. It has become apparent that many savanna mammals have suffered serious declines in recent decades. The reasons are unknown – several factors may be involved.

Researchers are eager to gain as much information as possible and would appreciate any help they can get. For many mammals records are poor and surveys are few and far between. So they would like to appeal to you – *Tropical Topics* readers – to get in touch with any relevant sightings.

Please see page 4 for contact details.

I would like to thank John Woinarski, Department of Infrastructure, Planning & Environment, Northern Territory, John Winter, Peter Latch, Scott Burnett and Peter Johnson, QPWS, and Euan Ritchie, JCU, for their valuable help with this issue.

Please note

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The uncommon brushtail possum

The common brushtail possum (*Trichosurus vulpecula*) has, generally, earned its name. It is the most frequently seen possum and is considered almost as a pest in some urban areas where it has a tendency to bed down in house roofs. In New Zealand, where it has been introduced, it definitely is a pest – 70 million of the animals are steadily chomping through the native vegetation without any natural controls.

In several parts of Australia, however, the common brushtail possum has been disappearing. It has largely vanished from central Australia, from many places in Cape York and along the east coast, west of the divide. For example, back in the early 1980s, mammal surveys between Weipa and Mapoon found an average of 12 common brushtails within a 23km stretch. In 1990, not a single one could be found in the same area. The surveys were repeated several more times to 1997 – without any success.

The same story has been recorded from a number of places – the Embley Range, near Laura and, further south, the Greenvale and Mt Surprise districts. However, just to confuse the issue, numbers of these puzzling animals have been increasing within about a 5km radius of Coen. Common brushtails are not the only mammals in decline. Common ringtail possums, brushtail phascogales, northern quolls and many other mammals across the savanna region have also been disappearing (see pages 2–5). Mammal experts are concerned.

Theories may outnumber the possums, and it is likely that a number of factors are contributing.

Drought may be a factor. During hard times it is possible that the possums

survive in refuges. These areas may naturally collect moisture and perhaps have better soil fertility. However, if cattle are also attracted to these areas, the possums may suffer from competition.

Grazing and other land management practices may be causing vegetation changes which affect native animals. At the end of the dry season, tree leaves become too desiccated for the possums to eat so they come down to the ground to feed on understorey plants. If the composition of this resource has changed, the possums could be in trouble at a critical time of year.

Introduced predators, in the form of cats and foxes, are likely to play a part. The majority of mammals which have disappeared from the savanna region weigh between 300g and 5kg – an ideal size for these predators to tackle. Diseases spread by dogs, cats, rats and so on may also be significant.

Mammal expert, Dr John Winter, has received a Cape York Natural History Trust grant to help him investigate this mystery. He is keen to hear from anyone who might be able to give him relevant information – please see page 4 for contact details.



TROPICAL SAVANNAS CRC
Cooperative Research Centre for Tropical Savannas Management



Queensland Government
Environmental Protection Agency
Queensland Parks and Wildlife Service

Northern Australia's disappearing mammals: a major conservation problem

by John Woinarski

Most of us think of northern Australia as a vast unspoiled land, full of abundant wildlife and mercifully free of the environmental problems that characterise more developed areas interstate or in other countries.

But this perception is a little misleading – not all is well in our outback environments. One of the most unmistakable symptoms is the loss of many mammal species from central Australia. Sometime in the last 150 years, 15 species have become extinct in central Australia, most of them throughout their entire former range (see p6). Until the early 1900s many of these were extremely abundant and our country is poorer for their loss.

Scientists had assumed that the losses were largely a phenomenon of arid and semi-arid Australia, tied up partly with the spread of foxes. We had assumed that northern Australia was secure, that it alone offered protection for an intact mammal fauna.

However, recent evidence suggests that not all is well in the mammal fauna of northern Australia. Surveys in the last two decades have reported absences or declines of many species, in south-west, north and south-east Kimberley, in the Victoria River District and the Gulf regions, in Cape York Peninsula and even in Arnhem Land.

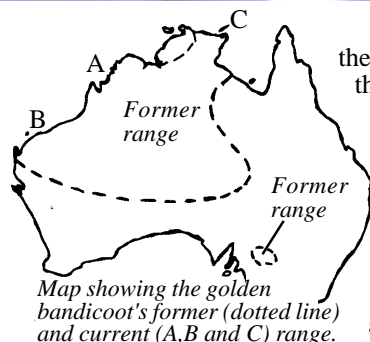
We can get some idea of the scale of this loss by comparing our current assessment of status with historical records. Knut Dahl, an early zoologist/explorer, wrote of his experiences in the south-east Kimberley and Arnhem Land in 1897. His accounts give some idea of how things have changed:

- **The burrowing bettong** (near Broome): “... the ground was nearly everywhere and in all directions excavated by the burrows of this little macropod ... all the scrubs, and especially the slopes ... are inhabited by countless numbers”. This species is now extinct in northern Australia.
- **The golden bandicoot**: “very numerous in the coast country around Roebuck Bay ... great numbers being brought to me”. It now occurs in only two or three small areas of the Kimberley mainland, one island off Arnhem Land, and two islands off the Western Australian coast (see map, above).
- **The golden-backed tree-rat**: “the houses of settlers ... are always tenanted by (this species)”. Again, it now occurs only in a few small areas of the Kimberley, with no Northern Territory records since 1967.
- **The brush-tailed rabbit-rat**: “in Arnhem Land is everywhere common in the vicinity of water”, and “numerous all over Arnhem Land, and in great numbers on the rivers on the lowlands”. This species is now known from the Northern Territory mainland only on the Cobourg Peninsula and one small area within Kakadu.
- **The brush-tailed phascogale**: “on the rivers Mary and Katherine it was frequently observed. In fact, nearly everywhere inland it was very constant, and on a



moonlight walk one would generally expect to see this little marsupial”. This species is now restricted, on the Northern Territory mainland, to fewer than five sites (Jabiru, Litchfield, near Cooida and Cobourg Peninsula). It is sparsely distributed in other states – see p5.

We can be reasonably sure that the current status of these species doesn't fit the accounts of 100 or so years ago, but it is not entirely clear over what period the decline has occurred. There is some evidence that the decline is still occurring. Re-sampling of mammal fauna in even large national parks in the Top End of the Northern Territory has shown a marked reduction for many species over the last 10-20 years.



Map showing the golden bandicoot's former (dotted line) and current (A,B and C) range.

The extent and timing of loss is difficult to pinpoint. This is partly because many of these mammals are unhelpfully inconspicuous; most are nocturnal, secretive and rarely seen. Few human residents of northern Australia appreciate what moves in their surrounds after dark, few appreciate how fascinating some of this fauna is, few realise when that fauna goes missing and few seem to care about it being lost.

Disturbingly, the species that appear to be declining in northern Australia are from the same groups of species as those that proved most likely to become extinct elsewhere in Australia: the bandicoots, possums, smaller wallabies, quolls and larger rodents.

Most of the losses in central Australia happened before we generally accepted responsibility for the state of our lands. Many disappeared before we even knew they were in trouble. Many disappeared remarkably quickly – within a decade or two, they went from being exceedingly abundant to completely absent. We should heed well the warnings from this vanished fauna, and try to ensure that we can maintain what we have in northern Australia.

The warnings are clear enough, but how should we deal with the problem? Unfortunately, we can't yet be sure of what is going wrong. This is a detective story, a race against time to find the culprits before all our charges are dead. There are some clues. We know that not only mammals but also birds are declining (see *Tropical Topics* 73). We know that many of the declining mammals have been lost across much of the north Australian mainland, but remain abundant on some islands. We know that many species appear to have declined across lands of all tenures and uses, including Aboriginal lands, pastoral lands and even national parks. Perversely, many of the declining species (such as the brushtail possum, black-footed tree-rat and northern brown bandicoot) remain common around major human population centres. It is a complicated story.

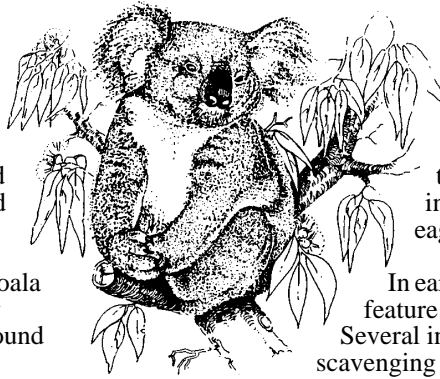
We have suspicions. Feral cats may be involved, because many of the declining species are meal-sized for wild cats, and because some of the islands that have retained good numbers of native mammals are cat-free. Changed fire

continued on page 3

Koala communities

Koalas (*Phascolarctos cinereus*) were once more widespread than they are now, covering a large area in the east of the country. Shooting (before they were protected), fire and deforestation are thought to have led to a decline in numbers, particularly in Queensland where, in 1927, 10 000 licensed trappers collected 600 000 koala skins. A survey conducted in widely scattered parts of the state in 1967 found that koalas had disappeared from 37 percent of sites surveyed. Natural recovery of reduced populations is probably slow due to slow breeding and dispersal and discontinuity of suitable habitats.

Koalas were probably never very numerous in the west and north of Queensland, due to a lack of suitable food trees. However, there are historical records of koalas from Cooktown and they are definitely found west of Ravenshoe. There have been sightings around Irvinebank, Herberton, Mt Surprise and so on – they seem to be found just west of the Great Dividing Range. It is thought there may be quite a large number of koalas spread out over a large area. If you see any, Dr Andrew Krockenberger at James Cook University would be very interested to hear about your sighting. You can contact him on e-mail: Andrew.Krockenberger@jcu.edu.au or on Ph: (07) 4042 1208.



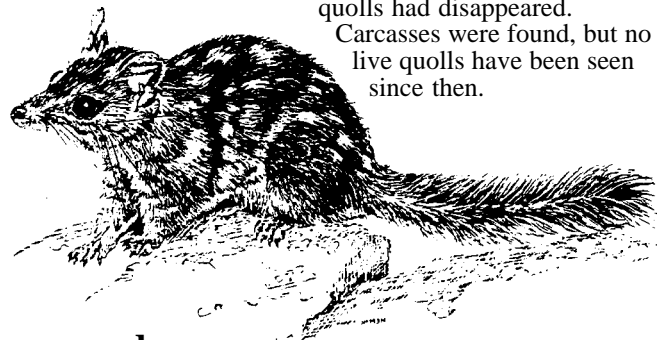
Quolls and toads

There is strong evidence that northern quolls (*Dasyurus hallucatus*) (as well as various monitor lizard species) decline rapidly in numbers when cane toads arrive in their patch. Quolls are active hunters. They include frogs in their diets and swallow prey eagerly.

In early 1983 northern quolls were a common feature of Iron Range, on the Cape York Peninsula. Several individuals could be seen each night, scavenging around camps. Toads arrived in mid-1983 and by late 1983 no live quolls were seen – just their carcasses. Between 1983 and 1986, not a single quoll could be found. One or two have been seen since this – but the decline has been dramatic.

From 1986 to February 1994, resident naturalists at Pajinka, at the tip of the Cape York Peninsula, reported northern quolls regularly scavenging around the lodge and providing regular sightings for tourist night walks. Toads arrived at Pajinka in February 1994 and within three months all live quolls had disappeared.

Carcasses were found, but no live quolls have been seen since then.



continued from page 2

regimes are likely to be involved. For many mammals, areas burnt every year in large fires are less suitable than areas exposed to fine-scale infrequent fires, partly because frequent fires destroy the dense shrub layer of fruit-bearing native plants. Disease may be implicated, possibly spread by wild dogs, feral cats and/or black rats.

Until we can find the cause of the problem, and then take management actions to remedy it, we are in danger of watching over the unfolding of a tragedy. We may keep the bush and the illusion of environmental well-being, but our wildlife heritage will be much diminished.

The problem of a disappearing mammal fauna is being considered now by wildlife agencies across northern Australia, partly through an extensive collaborative project supported by the Cooperative Research Centre (CRC) for Tropical Savannas Management. This project includes detailed studies of the ecology of, and threats to, some representative species, and a program of re-sampling some landmark wildlife surveys, in order to better delineate and assess the extent of biodiversity loss and its possible causes.

For more information: contact John Woinarski, Department of Infrastructure, Planning & Environment, PO Box 496, Palmerston, Northern Territory 0831, or, in Queensland, Peter Latch, QPWS, on (07) 4091 7751.

Monitoring macropods

Rock wallabies may not have suffered as badly as smaller mammals. Peter Johnson, QPWS, has been resurveying sites in Queensland where the **allied rock-wallaby** (*Petrogale assimilis*) was recorded 25-30 years ago. This animal is found from Mt Spec south to the Burdekin and Bowen Rivers and east to Porcupine Gorge and north-west to Croydon. So far, out of about 15 sites studied, all but two still have resident populations – and new sites have been found. It is extremely difficult to count rock-wallabies which makes a decline hard to gauge.

Other species of rock-wallabies in more restricted areas may be more vulnerable by virtue of their small isolated populations. However, rock-wallabies, in general, are quite well protected by their preference for rocky habitats which shelter them from most feral predators – although cats in Queensland and foxes in Western Australia are known to kill them. Although they are not affected by cattle grazing, goats are a problem – but thousands of goats throughout Queensland have been removed recently and sold for meat. Nonetheless, there is concern that young animals, dispersing from one rocky area to another, may run into trouble if the intervening landscape has been detrimentally altered.

A PhD student at James Cook University, Euan Ritchie, is embarking on a three-year study of the **antilopine wallaroo** (*Macropus antilopinus*). Found in the Cape York Peninsula and across the northern savannas of Australia, it is the only kangaroo species limited in distribution to the tropics and its ecology remains poorly understood. It was observed that although numbers were good in the 1980s the species then went through a marked decline, especially in the southern part of its range. However, kangaroo numbers do tend to fluctuate with rainfall. In addition to describing the antilopine wallaroo's ecology in Queensland, Euan will try to ascertain the extent of the reported decline and what factors (for example, climate and land practices) are responsible.

For more information, contact Euan Ritchie at the School of Tropical Biology, JCU Townsville, Ph: (07) 4781 5715 or e-mail euan.ritchie@jcu.edu.au



Mammals in the woodland trees

What is that animal in the tree? Here is a guide to tree-dwelling mammals of the savanna woodlands. Records of sightings – or lack of them – would be appreciated (see below for details).

Common brushtail possum (*Trichosurus vulpecula*)

Look out for a possum the size of a large cat with large pointy ears and a black, slightly bushy tail which is furred to the tip, although naked underneath at the end. The owner is able to curl its tail, to some extent, around branches. Its body is grey with a creamy coloured belly. It is often vocal, chattering and screeching.

The common brushtail lives in eucalypt woodland, where it feeds on leaves and fruit. It is found right across the savanna region, although, as mentioned on page 1, it is much less common in some areas than it used to be. Its distribution was probably always patchy, possibly preferring woodlands where tree hollows are more plentiful. For example, suitable shelter sites seem to be scarce in Darwin stringybark trees, which dominate woodlands right across the savannas. Patterns of fire and soil fertility may also dictate patchy distributions. On the other hand, common brushtails are fond of semi-urban areas where they often spend their days in tree hollows or in house ceilings.

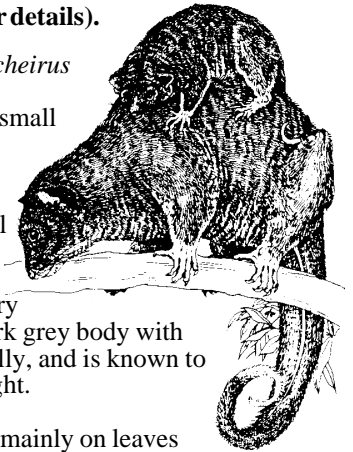


Wanted – reports

Have these tree-dwelling animals increased, decreased or stayed the same in numbers in your area? Or perhaps you have never seen them? Although looking primarily at common brushtail and common ringtail possums, Dr John Winter is interested in sightings of all tree-dwelling mammals. Please contact him at PO Box 151, Ravenshoe, QLD 4872; Ph/Fax: (07) 4097 0048 or e-mail: john.winter@iig.com.au.

Common ringtail possum (*Pseudocheirus peregrinus*)

Look out for a possum the size of a small cat, with small, rounded ears and a tapering tail which is usually white at the end for about two-thirds of its length. The fur lies flat on the tail – it is not bushy – and it can be coiled up tightly or used as a fifth limb to help its owner climb and carry nesting material. It has a light to dark grey body with tan coloured limbs and a whitish belly, and is known to make a bird-like twittering call at night.



The common ringtail possum feeds mainly on leaves although it will also eat flower buds and is notorious for attacking rose buds. It frequents eucalypt woodlands and river-side vegetation where it makes its den in a tree hollow or, occasionally, in a football-sized stick nest. It is found on the Cape

York Peninsula and down the east coast, inland to just west of the Great Dividing Range, but appears to have recently disappeared from many areas such as Cooktown. In recent years, on the Cape York Peninsula, it has been recorded only from the Jardine River area and Coen.



Sugar glider (*Petaurus breviceps*)

Look out for a fairly small possum (shorter in body length than the average black

rat) with a gliding membrane down the side of its body. It is light grey with a dark stripe down the middle of its forehead and along its back. There are also black stripes along the limbs. The tail is well furred and of a more or less uniform thickness, often with a white tip. As with all gliders, the tail is not prehensile – it cannot curl it. (Tails are often discarded by owls and worn in ringer's hats!) It calls with a yapping bark.

The sugar glider lives in a wide range of habitats, from monsoon forest patches to eucalypt woodland, feeding on nectar, pollen, tree sap and gum, insects, small arboreal mammals and possibly birds eggs. It spends the day in a tree hollow, sometimes with others. It is found throughout the tropical savanna region.

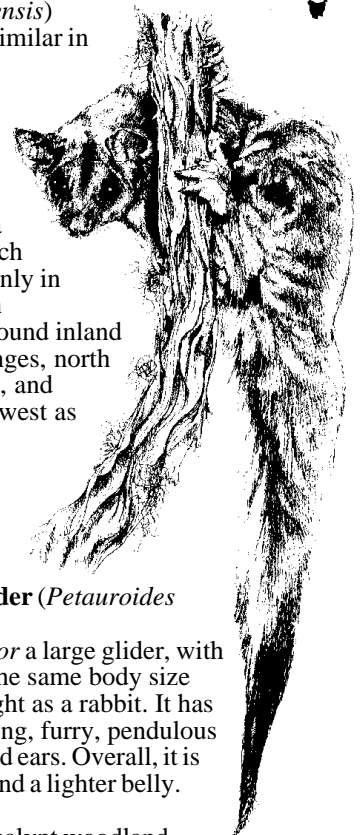
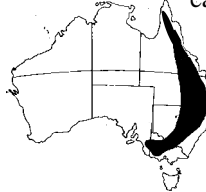


Squirrel glider (*Petaurus norfolcensis*)

Look out for a glider which is very similar in appearance to the sugar glider, but larger - closer in body length to the average black rat. Its tail is fluffier at the base than that of the sugar glider and lacks the white tip.

Living in eucalypt woodland, with a similar diet, the squirrel glider is much rarer than the sugar glider. It lives only in eastern Australia. In

Queensland, it is found inland of the coastal ranges, north to about Weipa, and possibly as far west as Normanton.



Feathertail glider (*Acrobates pygmaeus*)

Look out for a tiny, house mouse-sized glider with a distinctive feather-like tail. It is an energetic little creature which lives in eucalypt woodland feeding on

insects, nectar and pollen and sleeping in tree hollows by day. Its range extends down the east coast of Australia. In Queensland it is found from the east coast to about the Great Dividing Range and in the Cape York Peninsula.



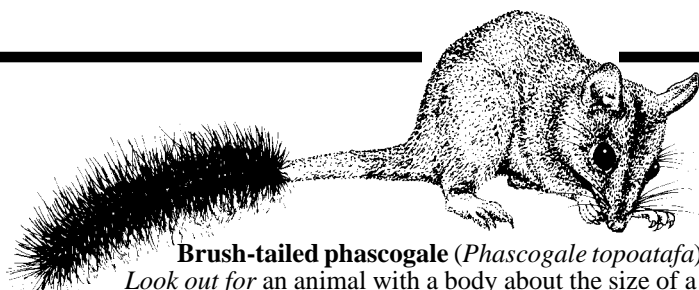
Greater glider (*Petauroides volans*)

Look out for a large glider, with roughly the same body size and weight as a rabbit. It has a very long, furry, pendulous tail and large, rounded, well-furred ears. Overall, it is generally grey with darker limbs and a lighter belly.

The greater glider lives in tall, eucalypt woodland spending the days in a tree hollow. Like koalas, but unlike other gliders, it feeds exclusively on eucalypt leaves. It is found only in eastern Australia; in

Queensland it is present inland of the coastal ranges and west to Mt Surprise and the Gregory Range.

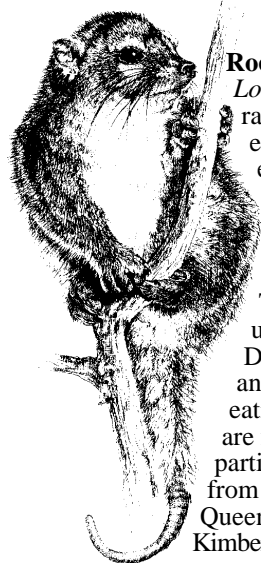




Brush-tailed phascogale (*Phascogale topoatafa*)

Look out for an animal with a body about the size of a large black rat, prominent, naked ears, a pointed snout and an extraordinary tail which looks like a large, black bottle-brush for much of its length. This contrasts with a uniformly grey body which is lighter on the belly. A carnivorous marsupial (dasyurid), it is an energetic creature, moving with fast, jerky movements.

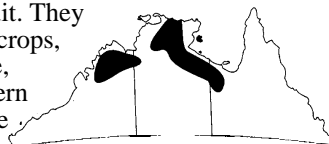
The brush-tailed phascogale lives in eucalypt woodland, rarely coming to the ground and feeding mainly on insects, found under bark, and some small vertebrates. In northern Australia, it has been found on the Cape York Peninsula (although there were no reports between the 1930s and 1990s) and in northern parts of the Northern Territory and Western Australia but has disappeared from many places. (See page 3.) Densities are very low.



Rock ringtail possum (*Petropseudes dahli*)

Look out for a stocky possum, the size of a small rabbit, living in rocky terrain. It has small, round ears with white patches below and above the eyes and under the ears. Its tail is short and has a thick, furry base but is almost naked for the last half. The body fur is grey with a dark strip down the middle of the back.

These possums are very sociable, and are usually seen in family groups of two or three. During the day they shelter in rock crevices and piles, emerging at night to feed in the trees, eating leaves and fruit. They are found in rock outcrops, particularly sandstone, from Lawn Hill in western Queensland, west to the Kimberley.

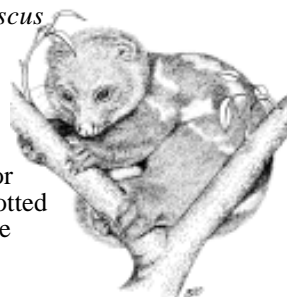


Visitors from the rainforest

These two rainforest dwellers are sometimes seen in the woodlands of the Cape York Peninsula

Common spotted cuscus (*Spilocuscus maculatus*)

Look out for an animal the size of a large rabbit with ears so small they are hidden within the fur and naked red skin around the eyes. The skin of the nose, paws and tail – which is naked for the last third – is yellow. Males are spotted cream and light brown while females are mostly grey with a lighter belly.



The common spotted cuscus sleeps on a branch during the day and feeds at night on fruit, flowers, leaves and small vertebrates. It prefers rainforest but is also found in mangroves and eucalypt woodland. It lives only at the tip of Cape York.

Striped possum (*Dactylopsila trivirgata*)

Look out for the distinctive black and white striped coat of this animal with a pronounced white Y on the face. Longer than a black rat in the body, it has a large head, a long body and bushy tail, prominent ears and an elongated fourth finger.

This energetic possum digs for grubs in rotting wood and also eats fruit and flowers. Although usually found in rainforest, from the wet tropics to the tip of the Cape York Peninsula, it may venture well into eucalypt woodland.



Black-footed tree-rat

(*Mesembriomys gouldii*)

Look out for a dark grey animal with prominent, naked ears and a hairy tail which is mostly black with a white tip for the last third. The size of a small cat, this animal is one of Australia's largest rodents. It is more squirrel-like than rat-like in behaviour.

The black-footed tree-rat spends the day in tree hollows and feeds at night on seeds, fruit and insects. It is found across northern parts of



the savanna region, but is not often seen.

Several, however, have turned up in roof spaces.

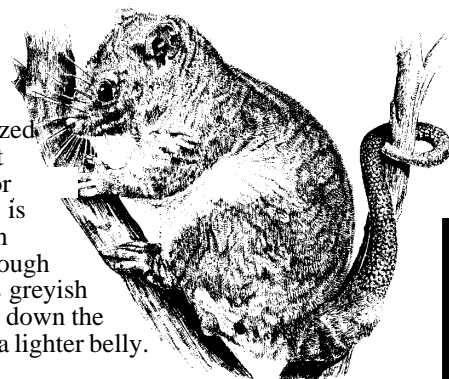
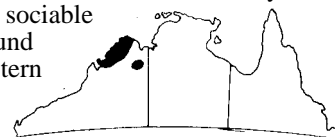


Scaly-tailed possum

(*Wyulda squamicaudata*)

Look out for a rabbit-sized possum with prominent ears and a tail which, for two thirds of its length, is naked and covered with scales which give it a rough appearance. Its body is greyish brown with a dark strip down the middle of the back and a lighter belly.

Like the rock ringtail, the scaly-tailed possum lives in rock piles, sleeping in crevices and coming out at night to feed in the trees on leaves, flowers and fruit. Despite their similar habits, however, the two species are not related. The scaly-tailed possum is not particularly sociable and tends to be solitary. It is found only in a small part of north-western Western Australia.



Koala (*Phascolarctos cinereus*)

Look out for a broad face with large, rounded furred ears, no tail and a dumpy, grey-coloured body. It sleeps on a branch during the day and feeds on eucalypt leaves at night. It can be very vocal, bellowing loudly at times. It is found only in eastern Australia. In Queensland it is more numerous in the south-east, with lower numbers to the west. However, it is thought that some scattered populations remain unrecorded (see page 3).



Rare sightings

Golden-backed tree-rat (*Mesembriomys macrurus*)

Look out for an animal the size of a large black rat with large naked ears and a very long tail tipped with a white brush. It is generally pale grey with a distinctive orange-brown stripe along the back.

Although it forages in trees, it sometimes comes to the ground and has been seen on seashores. Its distribution is now very limited (see page 2).

Brush-tailed rabbit-rat (*Conilurus penicillatus*)

Look out for a black rat-sized animal with a rabbit-like appearance. It has large naked ears and a very long brushed tail. It is grey-brown above, paler below.

This animal is an active climber and is found in eucalypt woodlands and seashore trees including pandanus, where it sometimes shelters by day. Its distribution is now very limited (see page 2).

Questions & Answers

Q Why are there no very large animals in the Australian savannas, like those found in Africa, in a similar environment?

A Huge animals – megafauna – flourished in Australia between about 1.6 million and 40 000 years ago, and then 85 percent became extinct.

In the game of life, large-sized animals are at a disadvantage. Usually their reproductive potential is low and population sizes small which makes them slow to adapt. Animals which reproduce rapidly have a better chance of survival.

Debate rages over reasons for megafauna extinction. Probably several factors contributed. It is likely that climate played a part as the Australian continent became much drier and vegetation changed. Fires, whether lit by people or nature, may have added to the problems. It has been pointed out that those animals which died out were browsers of soft vegetation while grass-eaters, such as kangaroos, emus and wombats, survived – perhaps a successful adaptation to effects of climate change. In addition, Australian soils are notoriously nutrient-poor, which may have prevented the evolution of large herds of herbivores, as found in Africa, and the carnivores to prey on them.

Human hunting is often blamed. Australia lost about 50 of its largest animals between 40 000 and 20 000 years ago – the generally accepted time of arrival of Aboriginal people. Indeed, extinctions of megafauna throughout the planet coincided with the arrival of humans – about 11 000 years ago in North and South America, 14 000–12 000 years ago in northern Europe, 4000 years ago in

the Arctic islands and just 800–500 years ago in New Zealand. In Africa and Asia, however, large animals evolved alongside humans, giving them the opportunity to develop avoidance strategies. This may have been the key to their survival.

We have problems deciding what is happening to our declining fauna now, so we will probably never be really certain about the past.

A University of Sydney website provides numerous links to fascinating material on megafauna. See <http://science.uniserve.edu.au/school/quests/mgfauna.html>

Q How long does a carpet snake live?

A *Graeme Gow's Complete Book of Australian Snakes* (Cornstalk Edition, 1993) says pythons live perhaps 30–40 years. As a rule of thumb smaller animals live shorter lives than bigger ones of the same type, so a carpet python is probably at the lower end of this scale. With reptiles, average longevities can be greatly extended in individual cases, and as reptiles generally grow throughout their lives (the rate slowing more or less logarithmically), an 8.5m long amethystine python (average length 3.5m) may be expected to be very old!

Someone working on *Morelia bredli* (no common name) in the deserts around Alice Springs, reckons (with some evidence) that their lives may have been extended to 80 or more years. This is because they spend all the drought years (seven out of 10 below average rainfall) in hibernation, and are therefore metabolically 'switched off' for most of the time. *Acknowledgements Russell Best, QPWS*

Facts and stats on declining savanna mammals

Fifteen mammal species have become extinct in central Australia during the last 150 years. They are the lesser bilby, the central hare-wallaby, the mala, the burrowing bettong, the brush-tailed bettong, the pig-footed bandicoot, the western quoll, the numbat, the desert bandicoot, the red-tailed phascogale, the desert rat-kangaroo, the crescent nailtail wallaby, the long-tailed hopping-mouse, the short-tailed hopping-mouse and the lesser stick-nest rat. Most are also extinct throughout their entire former range.

Common brushtails thrive on the leaves of Cooktown ironwood (*Erythrophleum chlorostachys*) which is really quite extraordinary, considering the extremely toxic nature of this tree. Introduced domestic animals are readily poisoned by it – as little as 50g of leaves is enough to kill. (See *Tropical Topics* 71 page 5.) Rock ringtail possums also eat leaves from this tree.

From the 1930s to the 1990s, no brush-tailed phascogales were recorded from the Cape York Peninsula. There was then a spate of sightings around Cooktown, including three road kills, and a population was found near Davies Creek, not far from Cairns. These animals are difficult to trap since they spend so much time in the trees so information on distribution is limited.

A mother rock ringtail possum sometimes forms a bridge with her body to allow the young to walk across her back and reach distant branches. This behaviour is unknown in any other possum. These possums are also unusual in that they form long-term pair bonds, with both parents raising the young and – unusually for mammals other than apes – embrace their children.

Rock ringtail possums often lick termite mounds – a behaviour not recorded from any other marsupial. Perhaps the mounds are a source of minerals to help settle their stomachs.

A total of 76 species of native mammals was recorded from the Cape York Peninsula by the 1948 Archbold Expedition. Eleven of these have not been recorded since.

Please remember that Dr John Winter is very keen to hear about sightings – or lack of sightings – of tree-dwelling mammals in the savanna region. Contact details on page 4.

Tourist talk

ENGLISH	GERMAN	JAPANESE
mammal	Säugetier	ほにゅうだぶつ 哺乳動物
tail	Schwanz	しっぽ 尻尾
ears	Ohren	みみ 耳
common	nicht selten	futsu u no 普通の
to disappear	verschwinden	shometsu suru 消滅する
to decline	weniger werden	gensho suru 減少する
drought	Dürre	kanbatsu 旱魃
grazing	weiden	houboku 放牧
introduced	eingeführt	kika 帰化
predators	Raubtiere	ほしゅうだぶつ 捕食動物

Out and about

The Tropical Topics survey

Thank you to all those who took the time to fill in and return the recent reader survey. Of approximately 2200 forms distributed, 176 were returned (8 percent). The majority expressed great enthusiasm and appreciation for the newsletter – thank you very much for your support.

A number of people asked for an **index** to *Tropical Topics*. This is available and is updated with each issue. By far the best way to obtain this is by e-mail which would allow the updated version to be forwarded to you on a regular basis (and save paper). To receive this, just send the editor an e-mail request (address on the back page) and it will be sent as a Word attachment. If you would like a hard copy, send a stamped, self-addressed A4 or A5-sized envelope to the editor (with a note of your request).

Some people requested information on topics which have been covered in previous issues of *Tropical Topics*. A number of people also had no knowledge of the **compilation booklets**. Two booklets have so far been produced. One contains the theme-based information from the first 12 'green' issues devoted to Wet Tropics topics. It includes chapters on: The Gondwana connection, Light in the rainforest, Wet Tropics webs, Rainforest possums, Cassowaries, Bats, Frogs, Mangrove plants, Mangrove animals, Fire and Caring for country. The other compilation contains material from the first 12 Great Barrier Reef issues: Coral growth, Fish colours and patterns, Dugongs, seagrasses and turtles, Echinoderms, Crown-of-thorns starfish, Sharks, Reef relationships, Whales and dolphins, Cyclones and El Nino, Spawning on the Reef, Water quality and Marine hazards.

Each booklet sells for \$11 (including GST) with reductions for bulk orders of 11 or more. They are available from the Queensland Parks and Wildlife Service, Cairns, Ph: (07) 4046 6600.

Usually the 'Out and about' section appears on page 3, but it has been suggested that when the newsletter is devoted to a theme, it breaks up the theme-based material and causes confusion. Hence its new location.

Birds which visit Australia for the summer months have been arriving since August.

Dollarbirds are among those which fly south from New Guinea to breed. Arriving about mid-October, they can be seen across northern Australia in open woodland and rainforest edges, choosing to nest in hollow branches.

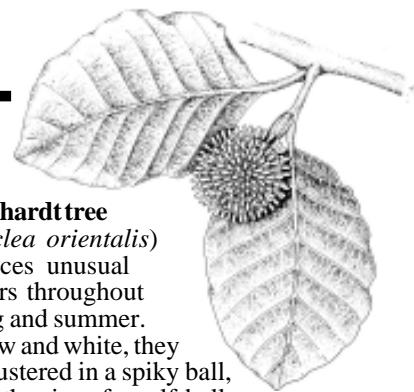
Dollarbirds have been named for the round, pale patches on their wings, reminiscent of silver dollars, which are visible in flight. Insect-eaters, they perch high in the tree-tops on the lookout for food and, like their close relatives, bee-eaters, they bash their catch on a branch before devouring it.



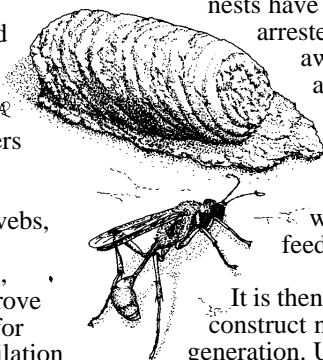
The Leichhardt tree (*Nauclea orientalis*)

produces unusual flowers throughout spring and summer. Yellow and white, they are clustered in a spiky ball, about the size of a golf-ball, and are lightly perfumed. The fruit is said to be edible but is very bitter, although it is popular with birds and flying foxes. This tree grows across the north of Australia. It prefers wet areas and is particularly common in lowland rainforests, close to streams, where it can grow to 20m in height.

Traditionally, the trunks make good canoes and the leaves and bark produce a poison which can be put into water to stun fish. The bark is also the source of a bright yellow dye.



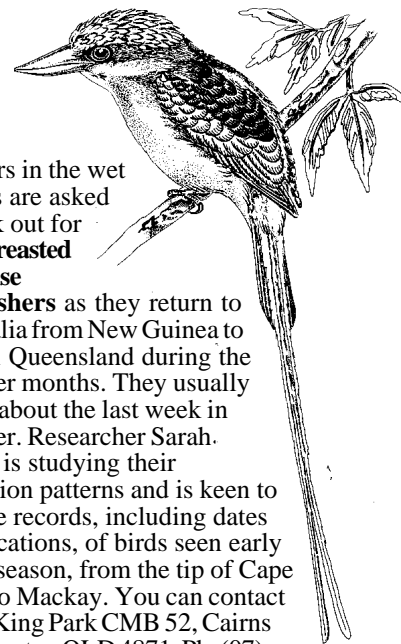
The beginning of the wet season in the tropics (or spring in southern Australia) triggers development inside the little mud nests created by **mud-dauber wasps** (left). Larvae within the nests have been living in a state of arrested development as they await an end to drought and/or cold. As conditions improve, development resumes and within two to five weeks, the mature adult wasps chew their way out of their home to feed on nectar and to mate.



It is then the female's job to construct nests for the next generation. Using numerous pellets of mud, carried in her mouth, she chooses any spot protected from sun and rain. Artificial structures are ideal. The nest contains up to 50 cells. In each, an egg is provisioned with spiders which have been paralysed by the mother wasp – the best way to keep unrefrigerated food fresh – and subdued. Intriguingly, researchers have discovered that in at least one wasp species the same weight of spiders (440 milligrams) is added to each nest whether it is a small number of large spiders or more small spiders. The division of the nest into different cells is necessary because the wasp larva will not distinguish between spider and sibling, once it starts feeding. When the food supply has been used up, each larva spins itself a cocoon, within the nest, and waits for favourable weather conditions to awaken it.

Readers in the wet tropics are asked to look out for buff-breasted paradise kingfishers

as they return to Australia from New Guinea to nest in Queensland during the summer months. They usually arrive about the last week in October. Researcher Sarah Legge is studying their migration patterns and is keen to receive records, including dates and locations, of birds seen early in the season, from the tip of Cape York to Mackay. You can contact her at King Park CMB 52, Cairns Mail Centre, QLD 4871; Ph: (07) 4060 7364; or Botany and Zoology, ANU, ACT 0200, Ph: (02) 6125 8434; e-mail: Sarah.Legge@anu.edu.au



If you are based in Cairns or the Atherton Tableland and deal with **enquiries from the public** regarding local national parks, the Queensland Parks and Wildlife Service would like to offer you a folder containing information leaflets. These will be updated on a regular basis. If you would like to receive one contact Nickie Stewart on Ph: (07) 4046 6696 ore-mail: nickie.stewart@epa.qld.gov.au

Bookshelf

Complete Book of Australian Mammals

Ronald Strahan
Cornstalk Publishing (1991)

This is the standard reference book for Australian mammals.

Spotlight on Possums

Rupert Russell
University of Queensland Press
(1980)

This delightful book, with excellent line drawings, includes some gliders along with rainforest possums.

Northeastern Queensland: some conservation issues highlighted by forest mammals

Winter, J.W.
In: Conservation of

Australia's Forest Fauna (pp 113-118)
Ed D.Lunney
Royal Zoological Society of NSW,
Mosman (1991)

The native mammals of Cape York Peninsula – Changes in status since the 1948 Archbold Expedition

Winter, J.W. and Allison, F.R.
In: Contemporary Cape York Peninsula
(pp31-47)
Ed N.C.Stevens and A. Bailey (1980)

Wildlife Australia 5: 100-3
Report on the koala survey, 1967
Kikkawa, J. and Walter, M. 1968.

Pacific Conservation Biology 3:65-72
1997

Colonizing Cane Toads cause population declines in native predators: reliable anecdotal information and management implications

Scott Burnett

Austral Ecology (2001) 26, 360-370 Changes in mammal populations in relatively intact landscapes of Kakadu National Park, Northern Territory, Australia

Woinarski, J.C.Z., Milne, D.J. and Wanganeen, G.

Nature Australia Vol 26 No 8
Autumn 2000

Adventures at Possum Rock

Myfanwy Runcie

This is an article on rock ringtail possums.

On the web

Tropical Topics is now on the web. Orange (savanna) issues (nos. 64, 68, 71 & 73) can be found on the Cooperative Research Centre for Tropical Savanna Management site:

http://savanna.ntu.edu.au/publications/tropical_topics.html

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Opinions expressed in *Tropical Topics* are not necessarily those of the Environmental Protection Agency.

While all efforts have been made to verify facts, the Environmental Protection Agency takes no responsibility for the accuracy of information supplied in *Tropical Topics*.

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