A POCKET GUIDE TO THE

Bats

of the Burnett Mary

Burnett Mary
REGIONAL GROUP
Practical Solutions for Natural Resource Management

Compiled, written and designed by Kelly Coleman @ PeeKdesigns.
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Disclaimer: The information contained in this publication is based on knowledge and understanding at the time of writing (2018). However, because of advances in knowledge, users are reminded of the need to ensure that the information upon which they rely is up to date and to check the currency of the information with the relevant authorities.

Australian Government | National Landcare Program

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PeeK designs

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Dedication

This creation of this book was inspired by John Parsons who has been working tirelessly for the conservation of bats in the Fraser Coast and Burnett Mary region for many years. His commitment and dedication to working with research institutions to provide alternative roosting sites for micro-bats is admirable. Through his field work, John found a need to have a pocket-sized quick reference book on the various bat species in the region. This resource is a result of his vision.

- KELLY COLEMAN
AUTHOR & ENVIRONMENTAL EDUCATOR

Contents

Introduction

Bats are the world's only true flying mammal species. They constitute around 20% of all mammals in the world, making them the second largest order of mammals. They provide numerous necessary ecosystem functions through the roles they play in our environment, such as pollinating trees, spreading seeds and consuming millions of insects every night. Unfortunately, many types of bat are now under threat, with 15.8% of species classified as endangered or extinct.

Australia's First People understood the importance of bats as a resource and to the balance of ecosystems, with Indigenous cave paintings and Dreaming stories showing us that bats have been symbolised and revered throughout countless generations.

Across the Burnett Mary region, and other areas around the country, researchers and community volunteers are doing their best to study bats, understand their movements, assess their population numbers, care for injured bats and determine how best to conserve them for the future. This book has been developed to educate and support the efforts of those people.

Using this book

'A Pocket Guide to the Bats of the Burnett Mary' has been developed as a quick reference field guide for identifying 36 bats known to be found in the Burnett Mary region of Queensland. As well as species identification, it also includes background information to help readers learn more about these fascinating and often misunderstood creatures

Intended to be used as a school and community resource, the pocket guide is the hard copy version of the All About Bats of Southern Queensland website allaboutbats.org.au[1]. The author would like to thank and acknowledge all those who have contributed resources to the development of this book.

1 The All About Bats website was developed in 2009 with photo and content permission from Les Hall. It was updated in 2017.

Grey-headed flying-fox cooling down (N.Edards)

Chapter 1

Background to bats

History of bats

Fossil records

In 2003, southwest Wyoming USA, a research team uncovered what could be the 'missing link' in bat evolution. The nearly complete fossilised remains of a 52-million-year-old bat species, *Onychonycteris finneyi*, has forelimb anatomy that indicated the species was capable of flight, however it lacked the ear morphology for echolocation. This supports the theory that flight in bats developed first and echolocation evolved later.

Other features of *Onychonycteris finneyi* include:

- Their wing shape suggests that an undulating gliding or fluttering flight style may be primitive for bats
- A long calcar indicates that a broad tail membrane evolved early in Chiroptera, probably functioning as an additional aerofoil rather than as a prey-capture device.
- Limb proportions and retention of claws on all digits, as opposed to two or three in all other known species, indicate that the new bat may have been an agile climber that employed quadrupedal locomotion and under-branch hanging behaviour.

(Simmons et al. 2008)

Oldest in Australia

Australonycteris clarkae, *from the Eocene of Queensland, is the oldest bat from the Southern Hemisphere and one of the oldest in the world. It is similar to other archaic Eocene bats from the Northern Hemisphere, and could probably navigate using echolocation, like most bats do today. Until its discovery, palaeontologists thought that bats colonised Australia much later, perhaps during the Oligocene.*

(australianmuseum.net.au/australonycteris-clarkae)

Cultural connections

From Melbourne to the Torres Strait and across to the Kimberly, bats have a diverse range of meanings to Australia's First People. They have been used as a food sources, feature in Dreaming stories, found in cave paintings and also in modern art. Many Indigenous people have a special relationship with bats, having adopted them as their individual or group totem species.

Examples include the story of Bunjil (eagle) and Balayang (bat) from the Kulin Nation in Victoria; Burra Bee Dee Mission in Coonabarabran, NSW, is the Gamilaraay name for 'flying mice' that come out of the caves on Forky Mountain; the tale of two brothers who broke a flying-fox taboo from the Wik community in Cape York, Queensland; and the story of Girraman (pages 6-7) from North Stradbroke Island, Queensland.

Cave painting from Cape York (L.Hall)

The story of Girraman

as told by Oodgeroo Noonuccal

Now Girraman's tribes were the fruit eaters. They slept by day and hunted by night.

They kept to themselves, making no contact with any of the other tribes.

They would always travel together. When the sun slipped below the western horizon they would awake and travel in search of honey and fruit trees.

They were very quarrelsome tribes and they would fill the night with their shrieks and cries. They were also very destructive.

What fruit they couldn't eat, they threw to the ground and made a very untidy mess.

When the dawn lit up the eastern sky, they would return to their camp and hang like giant cocoons from their camping place, in the darkest part of the land.

Folding their arms across their chests, they slept the days away.

Their hearing was very sensitive, they never ever got lost, for they had a special type of radar system in their bodies. Never would this system fail them, and it would guide them home to their camps every time.

They never liked the sun for their eyes would be blinded by sun's brilliant light. So they only travelled after the sun had left the sky.

The other tribes would wait until they slept and then they would capture them and eat them.

They would take the sleeping Girraman back to their own camps and their burning fires. There they would kill and cook Girraman on the hot coals, for they were very tender and good to eat.

They would eat only the chest of Girraman, for they knew if they ate any other part of him, they could get sick and even die.

Girraman's tribes could turn themselves into birds by night and into animals by day.

In the new Dreamtime, Girraman's tribe is called FLYING FOX.

Performing the Girraman Dance, Hervey Bay

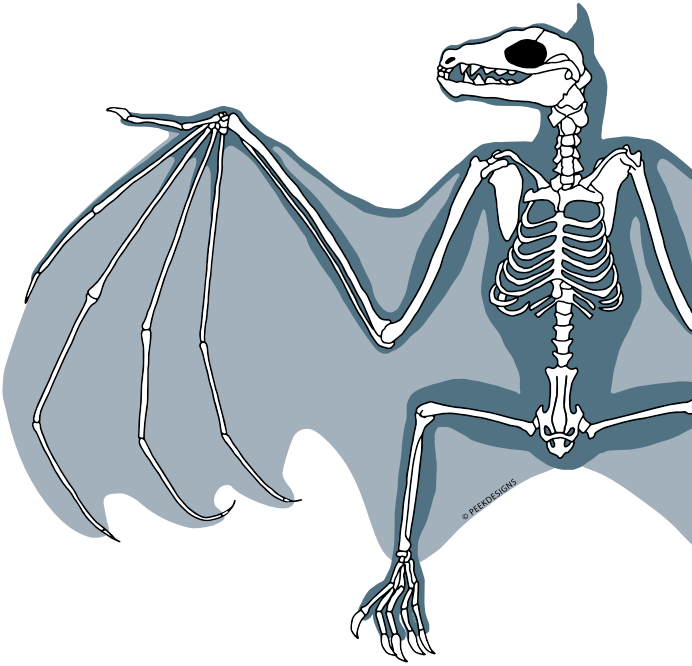
SOURCE: Oodgeroo Noonuccal. (1988) *Kath Walker in China.*

Oodgeroo of the Noonuccal, known until 1988 as Kath Walker, was born Kathleen Jean Mary Ruska on 3 November 1920, on North Stradbroke Island in South-East Queensland. She was one of seven children of Edward (Ted) Ruska and his wife Lucy (née McCulloch). Her father belonged to the Noonuccal people, the traditional inhabitants of Minjerribah (North Stradbroke Island).

Biology of bats

Flying mammals

Although they may fly like a bird, bats are actually warm blooded mammals. Their wings consist of a thin membrane of skin that stretches across a bone structure, very similar to those of a human or other mammal. The finger bones of bats are elongated and flattened instead of circular, making them more flexible than most other mammals. The size of their wings can vary depending on the species and the habitat in which they live.



Classification of bats

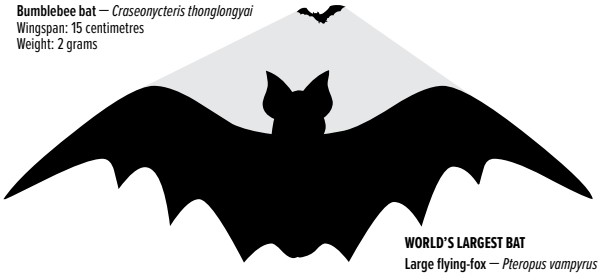
Bats are the second largest group of mammals with in-excess of 950 species from 18 families; comprising one fifth of all mammal species. In Australia, according to Reardon, Armstrong and Jackson (2015), there are 81 species of bats that can be classified into nine families.

They belong to an order of mammal called Chiroptera (pronounced 'ky-rop-te-rah'). Chiroptera literally means 'hand-wing'. Over millions of years, two sub-orders of bats have evolved, these are:

- Megachiroptera or Mega-bats
- Microchiroptera or Micro-bats

Size

One of the largest bat species in the world (based on weight) is the giant golden-crowned flying-fox (*Acerodon jubatus*), an endangered species found in the Philippines. The maximum size is believed to approach 1.2 kilograms, 55 cm long and have a wingspan of 1.5 metres. The other largest bat (based on wingspan) is the endangered Malayan or large flying-fox (*Pteropus vampyrus*). It has the largest wing span of any bat species at 1.8 metres and weighs about 1.1 kilograms.



The smallest bat in the world is the critically endangered bumblebee bat (*Craseonycteris thonglongyai*) of Thailand. It is only 29-33 mm in length, approximately two grams in weight and has a wingspan of up to 15 cm.

In Australia, the largest bat is the grey-headed flying-fox (*Pteropus poliocephalus*) with a wingspan of up to 1.5 metres and a weight of 1.1 kilograms, and the smallest is the little forest bat (*Vespadelus vulturnus*) 2.5-5.5 grams and has a wingspan of up to 15 cm.

Hanging upside down

Bats hang by their feet with their head down because it is energy efficient. No energy is required to hang compared with defying gravity and standing upright. In order to reduce as much weight as possible for flight, the bones and muscles of the legs are very light weight compared with those of a non-flying mammal of comparable size. The biggest bones and muscles are those used for flying.

Reproduction

Mega-bats

During the mating season, males will mark a two metre stretch of branch with their strong scent glands. This scent attracts females and courtship begins with vocalisations, flapping and grooming. Mating is usually very noisy followed by more grooming. Males will mate with multiple females during the mating period.

Flying-foxes gestate for around 25-28 weeks. Females give birth by using both their feet and wing claws to hold onto the branch effectively creating a 'catching basket'. She manages to catch the bundle and direct it towards her nipple where it latches on tightly.

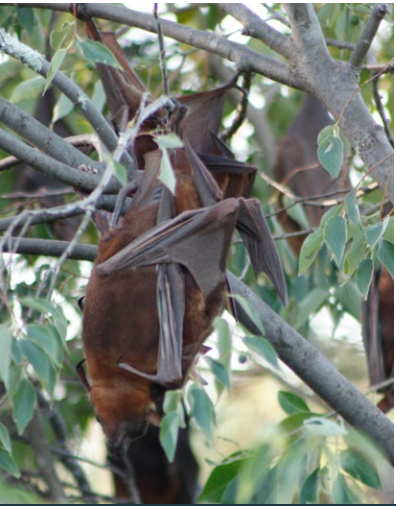
Babies are born with an instinct to grip tightly to anything that moves. With their extra toenails on their claws and backward facing milk teeth, it is very hard for a baby to fall from its mother, even during flight. By 4 weeks of age they become too heavy to

travel attached to mum at night foraging for food. At this stage baby flying-foxes are left in a 'creche' in the colony with other bats their own age.

By around 10 weeks they will start testing their wings, often crashing into nearby vegetation. They start to join their adults on their first night of foraging from about 20 weeks of age. At around 2-3 years of age these once-youngsters will have reached sexually maturity and the life cycles begins again.

Flying-foxes have been recorded to live up to 23 years in captivity and a probable maximum life span of around 15 years in the wild. Despite this long life span, reproduction rates are very low compared to most other mammals. This is largely due to females not being able to reproduce until their third season, only having one pup per year and there is also a high juvenile mortality rate.

(adapted from Pinson, 2007)



Little red flying-foxes mating (K.Coleman)

Grey-headed flying-fox giving birth (N.Edards)

Micro-bats

Most micro-bats have a hibernation period during the colder months of the year and this makes their reproduction cycle different to many other mammals.

For example, eastern bent-wing bats (*Miniopterus orianae oceanensi*) will mate in autumn before it gets too cold, but the fertilised egg (early embryo) within the female will stay dormant until spring - after hibernation. This is a special adaptation by micro-bats throughout the world where they can stop the fertilisation of the female egg until hibernation is complete. Once the female bats are active again in spring, the embryo will develop and the female is pregnant with her (often single) baby for 60-80 days.

Mothers will gather in the same area, sometimes a cave, tree hollow or building cavity, a few weeks before they give birth. These are called maternity colonies and can consists of a few dozen individuals to a million. Mothers gather like this for the combined warmth for their young and for protection - safety in numbers.

Mothers will carry their pups when feeding for the first few nights or a week. After that, the pups are left together in the colony

Miniopterus orianae oceanensi juveniles in a large maternity colony (L.Hall)

while the mother finds enough food for herself and to produce milk for the pup. When returning before dawn, mothers find their pups in the large colonies by their scent and calling for them.

The pups are able to fly at about seven weeks after birth. They are often fully grown and weaned by ten weeks. In the example of the eastern bent-wing bat, mothers leave the colony in March and are followed by the juveniles a few weeks later. Juveniles become sexually mature two years later.

(adapted from Churchill, 2008)

Habitat

All organisms need a unique combination of requirements within which to live, such as food, water and shelter. The combination of these is referred to a their habitat.

Roost sites

A bats' roosting site is much more varied than most people automatically assume. They don't just live in caves or trees, but they will live in a variety of locations within the natural and man-made environment.

Pteropus scapulatus (K.Coleman)

Miniopterus orianae oceanensi (L.Hall)

Cave-dwelling bats

Most people assume that all bats live in caves, whereas in fact only one third of the Australian bat population live in caves and these are all micro-bat species. The cave itself can vary in size from small cracks and crevices, piles of rocks or boulders, to overhangs and extensive limestone caverns.

Caves are an ideal environment for these bats as they provide protection during the day from most predators and the temperature is very stable (especially in larger caves); therefore the bats have to expend little energy in regulating their body temperature.

Forest-dwelling bats

All mega-bats and a large portion of those bats that don't use caves, will find suitable roosts within our native forests (from the dense rainforests to the open woodlands).

Mega-bats have the simplest of all roosts as they hang exposed on tree branches with little protection from the weather or predators. Flying-foxes gather in large groups, or colonies, providing them with added protection from predators. The eastern blossom bat and eastern tube-nosed bat are more solitary or small group species, relying on their camouflage to help protect them from predators.

Mega-bats will almost always be located in trees near a source of fresh water, such as a lake, river, creek or wetland. In large camps located along coastal estuaries in the Burnett Mary region, three flying fox species can be in residence at any one time. Little red flying-foxes can often be seen lower in mangroves while the larger black and grey-headed flying-foxes can be found higher in the surrounding trees.

Flying-foxes would ideally be located away from human disturbance, however human development can impede on their traditional habitat as they can often be found in small islands of vegetation amongst urban development. This can cause a lot of angst with residents living near the colony.

For example, when environmental factors in the region change, such as an abundance of food, lack of food elsewhere or loss of alternative roost sites, flying-fox colonies can swell to be in the hundreds of thousands. This mass inundation can damage trees, increase noise and smell and reduce the quality of the waterway adjacent to their roost through excess feacal matter.

Micro-bats that dwell in the forest will do so in tree hollows or under loose bark. Eucalypt trees provide the best roosts for micro-bats due to their ability to form hollows. However, hollows can take many years to form and the removal of trees from the landscape can greatly affect the habitat of forest-dwelling micro-bats. Females will utilise the best hollows while nursing young as they require extra room and protection from predators.

House-dwelling bats

Due to the reduction in native forests across the landscape, both for agriculture and urban development, there are some micro-bats that will utilise houses and other buildings and structures to provide suitable roost sites. There can often be very few signs that bats may be living in or around your house, but there may be droppings or an ammonia-like odour. Bats that live in your roof don't do any harm. They will often be there for only part of the year as they travel in search of food or for mating purposes.

Myotis macropus emerging from an old concrete drain hole (L.Hall)

Foraging for food

Great pollinators and seed dispersers

Flying-foxes have a highly adapted palate and tongue that enables them to only eat the bits of food they need to survive - the juice and pollen. The bulky fibre of fruit, seeds and flowers is spat out to enable the flying-fox maintain flight without the excess weight. This is also why flying-foxes are great pollinators and spreaders of seeds in rainforests and woodland forests.

Most people would not realise how quickly food moves through a flying-fox's digestive tract. Anything that goes down the throat of a flying-fox reappears out the other end in an astonishing 12 to 34 minutes (with pollen taking a bit longer). This is the fastest known gut transit time of any mammal known.

Flying-foxes play a vital role in the regeneration of native forests due to their nocturnal feeding habits and extensive feeding ranges. Flying-foxes are able to pollinate tree species that produce most of their nectar at night and are less likely to be pollinated by day-feeding birds and bees.

Climatic changes, such as drought and floods, can disrupt usual flowering or fruiting of food species and affect movements of flying-foxes around the landscape. This is why camps might swell beyond usual numbers at different times.

Pteropus scapulatus having an early feed on *Grevillea robusta* nectar (K.Coleman)

Flying-fox food trees

There are numerous food trees preferred by flying-foxes. The following species are found in the Burnett Mary region.

Broad-leaved paperbark
Melaleuca quinquenervia

Broad-leaved paperbark
Melaleuca quinquenervia

Coastal banksia
Banksia integrifolia

Swamp banksia
Banksia robur

Silky oak
Grevillea robusta

Red silky oak
Grevillea banksii

Lilly pilly flowers
Syzygium australe

Lilly pilly fruit
Syzygium spp.

Red bloodwood
Corymbia gummifera

Eucalypt forest

Keeping insects under control

Australian micro-bats predominantly eat insects, including beetles, moths, mosquitoes, grasshoppers and ground-based insects such as cockroaches, centipedes and caterpillars. One Australian species, the ghost bat, is known to eat frogs, birds, lizards and other small mammals. All micro-bats use echolocation to hunt and capture their prey.

Insectivorous (insect eating) micro-bats will eat around 50-75% of their body weight each night – sometimes this can be as much as 1200 mosquitoes every hour! This makes micro-bats extremely important for keeping insect populations under control.

Micro-bats provide an important ecosystem service, especially in agricultural areas as they feed on night-flying pest insects. If there are enough micro-bats around, they can reduce the need for pesticide sprays. It is strongly encouraged to keep suitable stands of native vegetation with old hollows to provide habitat for micro-bats. However, if pesticide sprays are used then this can have a detrimental impact as the bats go hungry from the lack of food.

Flying-fox communication

Flying-foxes use sound as a means of communication. Over 30 different types of calls have been recorded for grey-headed flying-foxes (e.g. mother/child and male/female calls). Vocal communication between individuals is necessary for identification and defence of territories.

Their hearing is similar to humans, making their calls clearly audible to our ears. Periods of noise occur mainly at dawn and dusk when the bats arrive at or prepare to leave the camp. Calls during the day occur mainly during the mating season in March/April or as a response to disturbances. These disturbances may include roaming dogs, birds of prey, planes, machinery noise (chain saws, lawn mowers, loud bangs) in or near the camp, or people walking among the roosting bats. Flying-fox noise can be minimised by preventing disturbances at the camp sites.

Flying-foxes can be heard feeding in trees at night. Noise indicates the defence of feeding territory and will cease as soon as the trees in which they are feeding finish flowering or fruiting.

Pteropus poliocephalus squabbling in the roost (K.Coleman)

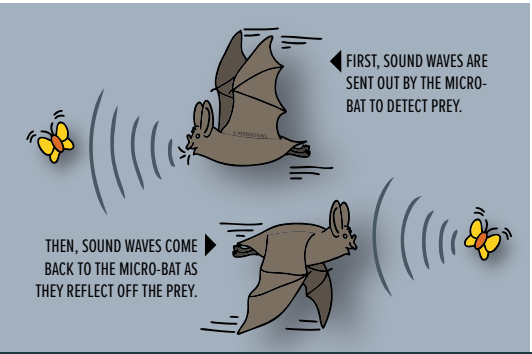
Echolocation

Micro-bats do not rely on sight to find food. Instead they use a form of radar called echolocation. Micro-bats use echolocation by bouncing sound waves off objects and listening to the echo.

Micro-bats emit pulses of sounds, normally at frequencies beyond the range of human hearing. We need to use a device called a Bat Detector to hear them. The sound waves are created in the bat's voice box and are emitted from the mouth or the nostrils. The echo that comes back to the bat can tell it how far away the object is, as well as its size and texture, and if it's moving!

There are a couple of species that have echolocation calls that people with sharp ears can hear – the yellow-bellied sheathtail bat (*Saccolaimus flaviventris*) and the white-striped freetail bat (*Austronomus australis*). Their calls are a regular a metallic-sounding tick... tick... tick... tick...

Micro-bats rely on echolocation to find insects while flying quickly through the air. They do this with startling efficiency. This is why micro-bats are such great controllers of insects and should be encouraged in both the urban and rural environments.



Left: Ecolocation diagram. Right: Using an Anabat Bat Detector at night (J.Parsons)

Gould's long-eared bats (L.Hall)

Chapter 2

Living with bats

Finding a balance

The Burnett Mary region has a great diversity of ecosystems due to its sub-tropical climate and topography. These ecosystems include rainforests, vine thickets, dry eucalypt forests, wallum heathlands, tidal wetlands and mangroves. Such a range of ecosystems attracts a large range of wildlife, including humans.

Local residents are lucky to be living so close to a large range of threatened species. Unfortunately, this comes at a cost. Increased urbanisation along the eastern seaboard of Australia has seen many species fall victim to cars, barbed wire and electric powerlines, feral and domestic animals, loss of habitat and an ever increasing pressure to find food.

Flying-foxes

Flying-foxes provide a number of 'ecological services' that benefit humans, including pollinating native plants and dispersing their seeds. In some places, the spectacular fly-outs of bats from their campsites support a growing ecotourism industry.

On the other hand, flying-foxes can cause considerable damage to commercial fruit crops, which has resulted in their persecution, particularly in rural areas. Farmers and fruit growers use a range of methods to prevent flying-foxes from raiding orchards, with exclusion netting being an effective technique.

Exclusion netting over an orchard (L.Hall)

People living near flying-fox camps in urban areas may find the odour, noise, droppings and raids on backyard fruit trees a nuisance. Roosting activities can also cause considerable damage to the vegetation at camp sites, particularly when camps are located within small patches of vegetation.

(Robert, Kanowski and Catterall 2006)

Micro-bats

Micro-bats are not as noticeable as their flying-fox cousins and due to their size do not have the noticeable impact on society. However, the impact that urbanisation and increased farming pressure on micro-bats is quite significant.

Loss of habitat is the major threat that impacts micro-bats. They need hollows and trees for roosting during the day and large areas to forage at night. Many micro-bats now seek shelter in buildings, abandoned mines and in drainage pipes.

One micro-bat can, on average, eat up to 2000 mosquito sized insects per night. In the USA, it has been estimated that farmers can save $3.7-$53 billion per year from reducing their costs on pesticide application due to insect pest suppression by bat predation (Boyles et al. 2011). Imagine the possibilities if we encouraged micro-bats to control insect pests in Australian agriculture! The impact bats have on keeping insect numbers down is huge and should be respected and encouraged.

Pteropus scapulatus fly over houses in an urban area (K.Coleman)

Human health

Like other wild animals, some bats may carry diseases that can be transmitted to humans. The two major viruses that have been identified in some bats includes the Hendra Virus and the Australian Bat Lyssavirus.

For more information about Hendra Virus or Australian Bat Lyssavirus go to www.health.qld.gov.au

Bats and flying foxes may carry bacteria and viruses which can be harmful to humans. People who are not trained and vaccinated should not handle bats.

If you find an injured bat or flying fox, do not attempt to help the animal yourself or touch it in any way.

Contact the RSPCA (1300 ANIMAL) or your local wildlife care group/ rescuer/carer, or the Department of Environment and Heritage Protection (1300 130 372) for assistance.

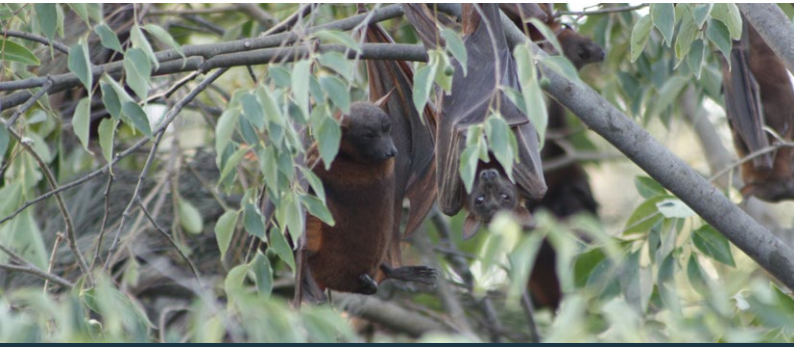
The best approach is to leave bats alone.

Flying-fox droppings

Flying-foxes have a very efficient digestive system with food passing through the gut in 12-34 minutes. This is to enable them to remain light so that they can easily fly. This means they often defecate in flight, splattering objects beneath their flight path with excrement.

Flying-fox faeces is easily removed with water and does not pose a serious health hazard. The only health hazard from faeces is related to bacteria (e.g. salmonella) which can be found in any animal's faeces, including humans. If you come across any fruit or vegetables that have a 'splattering' of flying-fox faeces, or from any other animals, you should either wash and peel the item or discard it in the bin.

To avoid damage to lacquered surfaces, cars should be covered or parked under cover.



Little red flying-fox inverts itself to defecate in the colony (K.Coleman)

Grey-headed flying-fox with a wound on its back. (K.Coleman)

Bats in a harp trap (M.Pennay)

Chapter 3

Research and conservation

Research projects

Micro-bats in Hervey Bay

As part of a collaborative research project with the Fraser Coast Micro-bats Group, University of the Sunshine Coast (USC) Animal Ecology students have installed several boxes in trees around the Hervey Bay campus to provide the tiny, threatened bats with shelter, roosting and nesting sites. There are now around 500 man-made micro-bat homes scattered around the Fraser Coast region.

USC Animal Ecology Lecturer Dr. Dominique Potvin is overseeing the project. The aim is to help increase micro-bat populations while reducing the numbers of annoying mosquitoes and midges. It also provides students with a platform for ongoing research that could be published internationally. Students will monitor the boxes and record data on regional bat populations and the health of our local ecosystems.

Dr. Dominique Potvin from the University of the Sunshine Coast (USC)

Conservation in action

Habitat destruction is a major factor in causing a species population to decrease, eventually leading to its being endangered, or even to its extinction. Large scale land clearing usually results in the removal of native vegetation and habitat destruction. Bushfires and poor fire management, pest and weed invasion, cyclone and storm damage can also destroy habitat.

Protected areas

One of the roles of national parks, nature reserves and other protected areas is to provide adequate refuge to animals by preserving habitat.

However, there are many hectares of land in the region that are not protected and it is important that we keep native bushland for our local wildlife. Without education and awareness of the importance of remnant bushland, these areas could be developed for urbanisation or farming, and we could see the loss of more bats and other bushland species.

The Great Sandy Biosphere

In 2009 the Great Sandy region was designated a Man and the Biosphere Reserve by the United Nations Educational, Scientific and Cultural Organisation (UNESCO). This status is an international recognition that we live in a very special place.

The Great Sandy Strait and adjoining hinterland has outstanding biodiversity values. The region is one of the most diverse in Australia, spanning a sub-tropical to temperate 'transition' zone, and contains representative species from both climates, including some that are unique to the region.

Obtaining Biosphere status gives recognition of these values at the international level, and also creates an opportunity for international biodiversity investment.

www.bmrg.org.au/our-programs/community/great-sandy-biosphere/

What can I do?

There are ways that people can help to protect and conserve all bat populations.

- Plant native habitat trees (such as fruiting rainforest trees or gum trees) in areas where bats are welcomed.
- Install micro-bat nest boxes in trees at school or at home.
- Correctly net fruit trees if you don't want them to be a source of food for local bats and birds - for more information go to: wildlifefriendlyfencing.com
- Learn more about bats so that you do not fear them.
- Raise awareness of the importance of bats in your home, school or community. You could start by taking a trip to your nearest flying fox colony, or supporting local events and activities.
- Become involved in a local community volunteer group or wildlife rescue program.

Installing micro-bat boxes (J.Parsons)

Planting trees (K.Coleman)

Lesser long-eared bat (M.Pennay)

Chapter 4

Bat species of the Burnett Mary

Bat families

All bats have been scientifically classified as part of the Chiroptera order. Scientists are continually reclassifying species based on the advancements in technology and scientific inquiry. There has been new research that suggests some of the micro-bat species should be reclassified as mega-bats. However, like all good science, this requires more research and results confirmed by multiple scientists.

Classification

The following tabulates the classification of bats, down to the family level, found across the Burnett Mary.

Kingdom	Animalia	Animal
Phylum	Chordata	Vertebrates
Class	Mammalia	Mammals
Order	Chiroptera	Bats
Families	Pteropodidae	Mega-bats
	Megadermatidae	False-vampire bats
	Rhinolophidae	Horseshoe bats
	Emballonuridae	Sheathtail bats
	Molossidae	Freetail bats
	Miniopteridae	Bent-wing bats
	Vespertillionidae	Evening bats

DISCLAIMER: All species descriptions and maps have been based on information provided in Churchill (2008), Hall (2009) and the Atlas of Living Australia (March 2018). Maps are provided as an approximate location only. Species names are in accordance with the Australasian Bat Society (Reardon, Armstrong and Jackson 2015).

(L.Hall)

(L.Hall)

PTEROPODIDAE

Eastern blossom bat

Syconycteris australis

Description

This mouse-sized fruit bat can only be found in the sub-canopy of rainforest trees. It has a long thin muzzle and a very long tongue for feeding on nectar.

Habitat

The eastern blossom bat has a foraging area of about 13 hectares of heathland that they use each night.

They are capable of hovering while feeding, but usually land on a flower to feed. In New South Wales, eastern blossom bats feed mainly on banksias and bottlebrush combs. In Queensland, they also eat *Melaleuca*, *Grevillea* and *Eucalypt* blossom as well as the nectar from lilly pillies.

Breeding

One young is born in early spring followed by another in late summer to early autumn.

Predators and Threats

Pythons, feral cats and owls.

Loss of habitat due to land clearing.

(M.Pennay)

PTEROPODIDAE

Eastern tube-nosed bat

Nyctimene robinsoni

Description

Generally a solitary species, the eastern tube-nosed bat can be found in subtropical and tropical rainforest along the Queensland coast.

They have long, protruding, tube-like nostrils and bright yellow spots splashed across the wings and ears. A long tail and makes a distinctive whistling call while in flight.

(L.Hall)

Habitat

The camouflage of the eastern tube-nosed bat makes them quite inconspicuous, even on exposed branches.

They eat a variety of fleshy fruit, favouring figs and are considered by some to be orchard pests. They generally don't forage further than a kilometre from their roost.

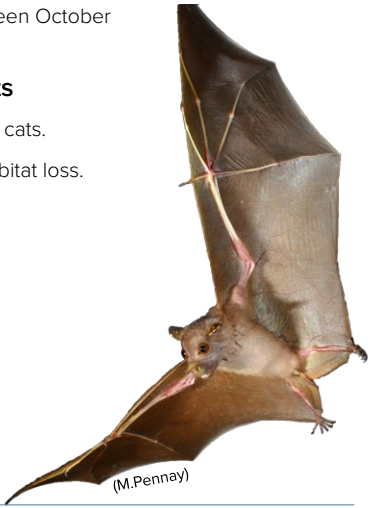
Breeding

A single baby is born between October and December.

Predators and Threats

Tree snakes, owls and feral cats.

Barbed-wire fences and habitat loss.



(M.Pennay)

PTEROPODIDAE

Black flying-fox

Pteropus alecto

Description

The black flying-fox is a common bat across northern Australia. They are generally black all over, often with a reddish brown mantle around the back of the neck. Their body fur extends down to the knee.

They can weigh between 600-1000 grams and have a wingspan up to 1500 mm.

Habitat

The black flying-fox lives and feeds mainly in tropical and subtropical forests and woodlands. Females will use mangroves and floodplains for maternity roosts.

Black flying-foxes can travel up to 50 kilometres from their day roost in search of food. Their preferred food is fleshy fruits and blossoms from *Eucalyptus*, *Melaleuca* and a variety of native and introduced species.

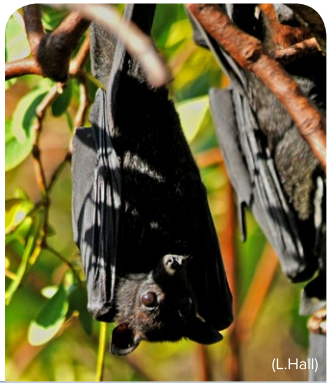
Breeding

In southern Queensland, females give birth from early spring to late autumn. This is three months later in the Top End.

Predators and Threats

Sea-eagles, carpet pythons.

Wildfire, barbed-wire fences, powerlines, habitat loss from tree clearing and prolonged drought.



PTEROPODIDAE

Grey-headed flying-fox

Pteropus poliocephalus

Description

The grey-headed flying-fox has a unique colouring of grey fur on its head with a distinctive orange collar around its neck. The rest of the body is a dark grey to brown and the fur extends down the legs to the toes.

They are a large bat and have similar size dimensions to the black flying-fox; weighing between 600-1000 grams with a wingspan up to 1500 mm.

Habitat

The grey-headed flying-fox can form large camps, in the thousands, in any stand of vegetation over three metres in height and preferably along waterways.

They will travel up to 50 kilometres from their roost in search of food. Their diet consists of pollen, nectar, fruit and flowers of around 200 plant species. They are known to raid orchards when local native food is in short supply.

Breeding

Females give birth mainly during spring, but this can be dependant on the abundance of food.

Conservation Status

This species is listed as vulnerable, Australia-wide.

Predators and Threats

Sea-eagles, carpet pythons.

Wildfire, barbed-wire fences, powerlines, habitat loss from tree clearing and prolonged drought.

(N.Edards)

PTEROPODIDAE

Little red flying-fox

Pteropus scapulatus

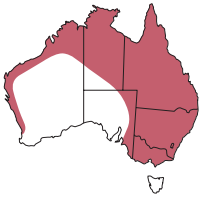
Description

The little red flying-fox is a nomadic species that can be found across most of Australia's semi-arid and tropical regions. This small reddish-brown species is characterised by its semi-transparent wings when flying during the day.

They are the smallest flying-fox on mainland Australia, weighing around 300-600 grams and have a wingspan up to one metre.

(K.Coleman)

Habitat



Due to their large numbers, little red flying-foxes can cause severe damage to roost sites from their combined weight on tree limbs. Camps can reach up to one million individuals during the mating season in early summer.

They feed predominantly on *Eucalyptus* blossom and will travel large distances to follow the flowering trees.

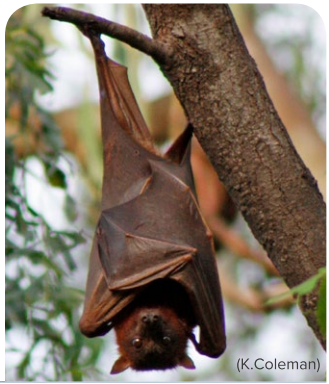
Breeding

Their reproduction patterns are similar to other *Pteropus*, however it is out of sync by six months. Babies are born in early autumn.

Predators and Threats

Pythons, sea-eagles.

Drought, habitat loss from land clearing, barbed-wire fences, continual human harassment.



(K.Coleman)

MEGADERMATIDAE

Ghost bat

Macroderma gigas

Description

The ghost bat is endemic to Australia and is our largest micro-bat. It is the second-largest micro-bat in the world.

They have pale grey to light brown fur, translucent wing membranes and large ears that join at the top of the head.

(L.Hall)

Habitat

The ghost bat used to be distributed across most of inland Australia but it is now restricted to tropical northern Australia. It is believed this is caused by isolation, long-term climate change and changed land management practices.

Ghost bats are cave-dwelling bats and maternity colonies can reach over a thousand individuals.

As well as insects, they will eat birds, bats, small mammals, frogs and geckos. Ghost bats are known to take their food back to their cave to eat in safety.

Breeding

Females give birth to only one young every year during July to September.

Predators and Threats

Quolls, dingoes and pythons.

Loss of old mines and caves, barbed-wire fences, tree clearing and modified fire regimes.

RHINOLOPHIDAE

Eastern horseshoe bat

Rhinolophus megaphyllus

Description

The eastern horseshoe bat generally has greyish brown fur with pale tips that stays the same throughout their lives. Some Queensland populations have bright orange fur, but this colour can change depending on their age and sex.

(L.Hall)

Habitat

Found along the eastern coastline, the eastern horseshoe bat reside mostly in caves or old mine shafts near coastal scrub, woodland, forest and rainforest.

Their short, broad wings allow them to forage close to the ground, even hover. Moths are their primary food source and they will take their prey to a temporary roost while they eat.

Breeding

Females will return to the same maternity roost every year, giving birth to a single young between October and November.

Conservation Status

This species is listed as vulnerable in Queensland.

Predators and Threats

Feral cats, foxes, pythons, hawks and owls.

Loss of old mines and caves, wildfires.

EMBALLONURIDAE

Yellow-bellied sheathtail bat

Saccolaimus flaviventris

Description

The yellow-bellied sheathtail bat is very distinctive with jet black fur on its back and contrasting white, cream or yellow fur on its belly.

Males have a large prominent gular (throat) pouch that contains glandular material, whereas the female has a naked ridge of skin in the same place. They also have a flat, pointed face.

Habitat

The yellow-bellied sheathtail bat roosts in tree hollows of small mixed-sex colonies up to a maximum of thirty individuals.

They can be found over a wide area of mainland Australia, from the arid inland to coastal forest, but are only found in the southern states during the annual summer migration south. Exhausted individuals have been found on the ground clinging to walls or fences. Humans may also come into contact with this bat when roost trees have been felled for firewood.

They are high flying bats that eat mainly beetles but also grasshoppers, crickets, leafhoppers, wasps and flying ants on occasion.

Breeding

Mating occurs in August and a single young is born between December and March.

Predators and Threats

Goannas, hawks, owls and pythons.

Tree clearing, bushfires and barbed-wire fences.

EMBALLONURIDAE

Troughton's sheathtail bat

Taphozous troughtoni

Description

This is a relatively large species of micro-bat, 80-94 mm (nose to tail) that is brown all over and has pale grey guard hairs.

Troughton's sheathtail bats have a distinctive skull shape with a pointed muzzle and rounded ears.


(H.McCall)

Habitat

The Troughton's sheathtail bat is a cave dwelling species but can be found in rock crevices, boulder piles and abandoned mines.

Usually there are less than twenty individuals roosting together and individuals are spaced apart. Their roosts are located within dry scherophyll forest, open woodland, mulga shrublands and spinifex grassland regions of inland Queensland.

They are presumed to feed mainly on beetles.

Breeding

Mating occurs in late August to early September. A single young is born between November and December.

Predators and Threats

Pythons, dingoes and owls.

Loss of old mines and caves.

(T.Reardon)

MOLOSSIDAE

White-striped freetail bat

Austronomus australis

Description

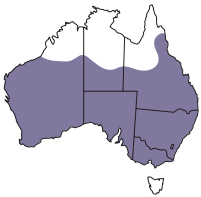
This species is the largest and most widely distributed of Australia's freetail bats with echolocation calls audible to humans.

It has dark brown to black fur all over with two distinctive white stripes along the sides of the belly and onto the wings. White patches also often mark the chest and occasionally the belly. A prominent throat pouch is present in both sexes.

* This species was previously classified as *Tadarida australis*.

(M.Pennay)

Habitat



White-striped freetail bats dwell in trees and can be found in rainforest, forest, open woodlands, arid shrubland, agricultural and urban areas.

Research by Bullen and McKenzie (2005) in Western Australia has identified that they migrate south in summer to avoid hot, humid, wet conditions and make use of abundant food sources post spring. Autumn starts to see a partial migration north, as pregnant females search for suitable roosts and food supplies during the winter months.

They fly up to fifty metres above ground and feed predominantly on moths, beetles and grasshoppers.

White-striped freetail bats are know to be solitary species or cluster in small groups of around ten individuals. This can increase to 300 individuals in maternity colonies.

Breeding

Mating occurs in late August with a single young being born between mid December and late January.

Predators and Threats

Pythons, goannas, hawks and owls.

Loss of tree hollows, particularly ones used as maternity sites, land clearing and modified fire regimes.

MOLOSSIDAE

Greater northern freetail bat

Chaerephon jobensis

Description

C. jobensis is the only representative of the genus in Australia. This is one of the few species in Australia whose echolocation is within the range of human hearing.

It has large ears that are joined across the top of the head and a pig-like face with large fleshy lips that have a number of vertical wrinkles. The back fur is short and a rich dark reddish brown to smoky black colour, while the belly is a lighter grey-brown.

(R.Best)

Habitat

Roost sites are predominantly tree hollows in colonies of ten to fifteen individuals, but they can congregate in caves in their hundreds.

Nightly foraging takes place in open air-spaces above the tree canopy as they hunt large numbers of cockroaches, moths, beetles and crickets, but will also seek out mosquitoes, lacewings, sawflies and other bugs. Greater northern freetail bats are often found foraging close to water, such as mangroves, monsoon forests, paperbark-lined creeks, tall open forest, riverine forests and in river red gum lined dry creek beds. They will also forage over cane fields and other crops in irrigated farmland.

Breeding

Females give birth to a single young in October and November.

Predators and Threats

Pythons, goannas, hawks and owls.

Loss of tree hollows, roost disturbance and modified fire regimes.

(M.Pennay)

MOLOSSIDAE

East coast freetail bat

Mormopterus norfolkensis

Description

This species is confined in distribution to the east coast of Australia from southern Queensland down to southern New South Wales. It is also known as the eastern little mastiff bat.

The east coast freetail bat's fur is dark to reddish-brown on the back and slightly lighter on the belly.

Habitat

Most recorded sightings of the east coast freetail bat have been in dry eucalypt forests and woodlands on the eastern side of the Great Dividing Range.

They show a preference for open spaces near to their day roost when feeding at night.

These bats roost in the hollows of large old trees but they have been known to occupy buildings and in bat boxes.

Breeding

Females give birth to a single young in late November or early December.

Predators and Threats

Hawks and owls.

Loss of tree hollows, land clearing and modified fire regimes.

MOLOSSIDAE

Northern freetail bat

Mormopterus lumsdenae

Description

This thick, robust and muscular bat is the largest species of *Mormopterus* (based on weight) in Australia.

It has short greyish to light brown fur on the back and noticeably paler fur on the belly. Their distribution is restricted to the northern half of Australia. They have triangular ears that are not joined together.

* This species was previously classified as *Mormopterus beccari*.

Habitat

Northern freetail bats commonly roost in tree hollows but colonies up to fifty individuals have been known to roost in the roofs of houses.

They prefer rainforest, forest, mangroves, woodland, arid shrublands, agricultural and urban areas.

Their diet is predominantly moths and beetles that they catch above the canopy or along watercourses. They can consume large numbers of insects that are pests to humans and crops.

Breeding

A single young is born between October and November.

Predators and Threats

Pythons, hawks and owls.

Loss of tree hollows, land clearing and modified fire regimes.

MOLOSSIDAE

Eastern freetail bat

Mormopterus ridei

Description

The eastern freetail bat has a rich brown fur on its back with slightly paler belly fur. The skin on the ears and face is a dark grey colour. They are shaggier, darker and have longer fur than their inland freetail bat cousins, and they tend to prefer the wetter climate of the eastern seaboard.

* Also known as Ride's freetail bat.

Habitat

Eastern freetail bats prefer living in tree hollows, where colonies of up to several hundred have been recorded.

Living along the eastern seaboard means their habitat preferences lean towards rainforest, tall open forests, woodlands, riparian open forest and dry schlerophyll forests.

They tend to fly in open spaces between trees as they hunt for bugs, flies, beetles, moths and spiders.

Breeding

A single young is born around November.

Predators and Threats

Hawks and owls.

Loss of tree roosts, land clearing, roost disturbance and modified fire regimes.

MINIOPTERIDAE

Little bent-wing bat

Miniopterus australis

Description

The little bent-wing bat is the smallest of all the bent-wing bats. It has chocolate brown fur all over, that is lighter on its belly, with a short muzzle and a domed head.

These are cave dwelling bats but have been known to utilise abandoned mines, tunnels, stormwater drains and occasionally buildings.

(L.Hall)

Habitat

Little bent-wing bats prefer well timbered areas where they feed primarily in the shrub and canopy layers.

Their diet consists primarily of beetles, moths, flies and even spiders.

Little bent-wing bats congregate in maternity colonies during summer and populations can get up to 100,000 individuals.

Breeding

Females congregate in maternity colonies with the eastern bent-wing bat from August. Young are born in December.

Predators and Threats

Ghost bats, pythons, feral cats, foxes, hawks and owls.

Loss of limestone caves and old mines as well as human disturbance.

Eastern bent-wing bat

Miniopterus orianae oceanensi

Description

The eastern bent-wing bat lives along the eastern coastline of Australia. It has dark reddish brown fur that is slightly lighter on its belly. They have a short domed head with rounded ears.

The last joint of their third digit is four times longer than the preceding joint, allowing the wing tip to fold back under the wing.

* This species was previously classified as *Miniopterus schreibersii oceanensis*.


(L.Hall)

Habitat

Eastern bent-wing bats are a cave dwelling species that will also live in man-made structures like abandoned mines and road culverts. Their roosts are in tall timbered forest to open grasslands.

In forested areas, they are known to forage for flies, cockroaches and beetles well above the canopy, but in grasslands they stay to within a few metres above the ground. Some individuals have been known to travel up to 65 kilometres in one night.

Breeding

Females will congregate in maternity colonies in October (up to 100,000 individuals), where they will give birth to a single young in December.

Predators and Threats

Feral cats and foxes.

Loss of caves and old mines, human disturbance.

(L.Hall)

VESPERTILIONIDAE

Gould's wattled bat

Chalinolobus gouldii

Description

The Gould's wattled bat can be found in every climatic zone in Australia. They have a covering of brown fur on their back that darkens to almost black on the head and shoulders. This species ranges in size across its distribution - individuals in northern and eastern Australia are smaller than those from the south and west.

They often fly out straight after sunset and the ambient light makes them vulnerable to predation.

Habitat

The Gould's wattled bat will roost in the hollows of mature trees like river red gums (*Eucalyptus camaldulensis*) and cypress pines (*Callitris* sp.). In the absence of good tree cover, these bats will use buildings and other structures during the day. They can travel more than ten kilometres from their roost when foraging for insects at night.

Their diet is varied and can include moths, cockroaches, stoneflies, crickets, cicada and many other flying and non-flying insects.

Breeding

Twins are born between September (northern Australia) and November (southern Australia) and are fully grown in about six weeks.

(M.Pennay)

Predators and Threats

Cats, carpet pythons, goannas, hawks, owls and butcherbirds.

Loss of tree hollows and modified fire regimes.

VESPERTILIONIDAE

Chocolate wattled bat

Chalinolobus morio

Description

The chocolate wattled bat is so named for the uniformly milk-chocolate brown fur on its back and belly. They have a short muzzle with a steeply domed head. The lobes at the corner of the mouth (or wattle) is small but the secondary lobe along the lower lip is semi-circular and easily seen. This can be the distinguishing feature between this species and the large forest bat (*Vespadelus darlingtoni*).


(M.Pennay)

Habitat

Chocolate wattled bats mainly roost in tree hollows, under bark and occasionally in houses and caves (south-western Australia). They are usually found in continuous forests, woodlands, mallee and open plains. Roost sizes can vary from six to seventy females in one hollow. Males tend to roost alone.

They feed mainly on moths and beetles, but their food source will depend on the abundance of aerial insects within a five kilometre radius of their roost.

Breeding

Females will give birth to one or two young in late spring and early summer.

Predators and Threats

Goannas, hawks, owls and feral cats.

Loss of tree roosts and modified fire regimes.

VESPERTILIONIDAE

Hoary wattled bat

Chalinolobus nigrogriseus

Description

Hoary wattled bats have dark grey to black fur with white-tips to the hairs, which gives the distinctive frosted appearance. They are smaller and have considerably more frosting on the fur in Western Australia that those that live in Queensland, which can be almost black.

They emerge from their roosts early in the evening, often in large numbers.

(M.Pennay)

Habitat

Hoary wattled bats prefer to roost in the hollows of *Eucalyptus* trees, and occasionally rock crevices. They like to fly fast below the canopy layer and therefore live in areas where the undergrowth is naturally sparse.

They can commonly be found in a range of habitats, including forests, woodlands, vine thickets, coastal scrub and open grasslands, across the coastal-hinterland regions of Queensland, Northern Territory and in the Kimberley region of Western Australia.

Their diet includes beetles, moths, flying ants and mosquitoes.

Breeding

Females will give birth to one or two young in October and November.

Predators and Threats

Pythons, hawks and owls.

Tree hollow loss due to clearing and modified fire regimes.

VESPERTILIONIDAE

Little pied bat

Chalinolobus picatus

Description

Little pied bats have glossy black fur on their backs with a grey belly. There are two white stripes that run on the sides of the body and form a “V” at the pubic region.

It is the smallest of the *Chalinolobus* species measuring approximately 40-50 mm in body length and weighing four to eight grams.

Habitat

Little pied bats will live in tree hollows as well as caves, abandoned mines and buildings. They generally roost alone and will remain in the same area throughout their lifetime.

They prefer dry forest and woodland, Brigalow and mallee of the Darling River catchment. Surface water is scarce in this area and the species frequently visits stock dams for an evening drink.

Breeding

Females will give birth to one or two young in October and November.

Predators and Threats

Feral cats, hawks, owls and butcherbirds.

Tree clearing and loss of old mines.

VESPERTILIONIDAE

Eastern falsistrelle

Falsistrellus tasmaniensis

Description

One of the largest forest-dwelling bats in south-eastern Australia, the eastern falsistrelle has dark-brown to reddish-brown fur on its back with a slightly paler belly. The ears are large and there is a characteristic small notch near the tip.

Colonies are usually almost all females or males. Their home range is limited to about 136 hectares. This species has been recorded in the Bunya Mountains.

Habitat

Colonies of three to eighty individuals can be found in the hollows of large eucalypts in tall wet forests and coastal mallee.

They forage just below the forest canopy and avoid dense understorey and regrowth. Their diet mainly consists of beetles and moths.

Breeding

A single young is born in December.

Predators and Threats

Owls.

Loss of tree hollows and modified fire regimes.

VESPERTILIONIDAE

Large footed myotis

Myotis macropus

Description

The large footed myotis is one of Australia's most fascinating bats as it is the only species of bat in Australia to capture fish for food. They have large feet which they use to trawl for food near the water's surface.

The fur varies from dark grey to reddish-brown. Partial albinism and bright orange fur have also been observed.

(L.Hall)

Habitat

The large-footed myotis tend to roost in caves, tree hollows, under bridges, in mines, road culverts and stormwater drains near permanent water. They prefer vegetated, low lying, undulating land rather than cleared. Colonies are usually less than fifteen in number.

This species feed on small fish, prawns and aquatic macro-invertebrates like water boatman, backswimmers and whirligig beetles. They fly 15-100 cm above the water and trawl through the water with their feet. It is thought that they use echolocation to detect ripples on the water surface made by prey. They will also hunt flying insects that congregate around water.

Breeding

Dominant males form a harem in the colony with one male and up to twelve females. In northern New South Wales, up to two young are born per year, one in October and the other in January. In northern Queensland, females can have up to three pregnancies per year.

Predators and Threats

Feral cats, hawks, owls and pythons.

Loss of caves, mines and other roost sites.

VESPERTILIONIDAE

Eastern long-eared bat

Nyctophilus bifax

Description

Eastern long-eared bats are brown to tan in colour and have long ears from 19 to 27 mm long. Their diagnostic feature is the low, rounded and hairless ridge on the muzzle behind the noseleaf.

(L.Hall)

Habitat

Eastern long-eared bats like to live in wetter areas that include rainforest, monsoon forest, riparian forest, swamps and mangroves.

They roost under peeling bark, hollows and in depressions on tree trunks in colonies of no more than ten individuals.

These bats hunt be perching 5-10 metres above the ground and wait for their prey to come into range. If they don't catch their food (usually moths) within 3-5 minutes they will move to another perch in the nearby vicinity.

Breeding

Twin young are born in October. A mother bat is able to carry the twins until their collective weight nearly equals her own.

Predators and Threats

Hawks, owls, pythons and feral cats.

Loss of trees, land clearing and modified fire regimes.

VESPERTILIONIDAE

Corben's long-eared bat

Nyctophilus corbeni

Description

The Corben's long-eared bat is largely a solitary micro-bat with grey-brown fur that can be slightly lighter at the tips. As their name suggests they have long ears, about three centimetres in length.

* This species was previously classified as *Nyctophilus timoriensis*.

Habitat

Corben's long-eared bats have a scattered distribution mostly within the Murray-Darling Basin, although they have been recorded in the Bunya Mountains.

They usually roost under bark and in dry fissures of branches. Tree hollow are used as maternity sites. They will forage up to three kilometres from their roost.

They can be found in a wide variety of habitat including eucalypt forests, mallee, open woodlands and savannahs. In Queensland, this includes semi-evergreen vine thicket, dry schlerophyll forests, *Callitris* forest and open forests with poplar box, bulloke, native pine and/or grass trees.

Breeding

Single young are born between November and December.

Conservation Status

This species is listed as vulnerable, Australia-wide.

Predators and Threats

Goannas, hawks, owls and feral cats.

Tree loss from forestry and agricultural clearing, exposure to agricultural chemicals (pesticides) and modified fire regimes.

VESPERTILIONIDAE

Lesser long-eared bat

Nyctophilus geoffroyi

Description

This is the most common species of *Nyctophilus* in Australia.

They have light grey, bi-coloured fur (darker at the base) on their back and almost white fur on the belly. They have very long ears up to 25 mm long and can be identified by the distinctive 'Y-shaped' groove behind the noseleaf.

(L.Hall)

Habitat

Lesser long-eared bats are found across Australia in a range of habitats from arid desert to forest, agricultural and urban areas.

They generally roost alone (sometimes up to three individuals) in crevices, under lifting and peeling bark, in tree hollows and in buildings. Maternity colonies can get up to fifteen females with a single male.

These species tend to fly close to vegetation and into the understorey as they feed on moths, crickets and grasshoppers.

Breeding

Females usually give birth to twins in late October and November.

Predators and Threats

Owls, hawks and cats.

Loss of tree roosts and land clearing.

VESPERTILIONIDAE

Gould's long-eared bat

Nyctophilus gouldi

Description

The Gould's long-eared bat has slate-grey to brown fur on the back and ash-grey fur on the belly. This species has longer ears than *N. bifax*; they are usually 24 to 30 mm long.

This bat is known for its habit of changing roost sites regularly. It will readily occupy bat boxes.

Habitat

Gould's long-eared bats will roost in tree hollows and under peeling bark. Females will roost in groups of twenty or more, whereas males will roost in small groups (fewer than six) or alone.

They tend to live in a variety of habitats including rainforest, forest and woodlands, along watercourses in dry woodlands and river red gum (*Eucalyptus camaldulensis*) forests.

They are slow flying bats and keep to 2-5 metres above the ground when feeding on moths, beetles, crickets, flies, cockroaches and other insects. They have also been recorded landing on the ground to catch prey.

Breeding

One or two young are born in late October.

Predators and Threats

Goannas, hawks, owls and cats.

Loss of tree roosts, land clearing and modified fire regimes.

VESPERTILIONIDAE

Golden-tipped bat

Phoniscus papuensis

Description

The golden-tipped bat has woolly, dark brown fur with characteristic golden tips. The golden-tipped fur also sparsely covers the ears, forearms, thumbs and major wing bones.

Their broad wings and large tail membrane allow them to hover and manoeuvre precisely.

* This species was previously classified as *Kerivoula papuensis*.

Habitat

Golden-tipped bats like to roost in abandoned nests of yellow-throated scrubwrens and brown gerygones as well as tree hollows. Tree hollows are usually reserved for maternity sites where up to twenty females will congregate.

These are usually associated with rainforest, tall open forest, dry and wet sclerophyll forest and coastal *Melaleuca* forest. Individuals have been recorded inside houses.

These bats travel up to two kilometres from their day roost while feeding at night.

Their ability to hover is an essential trait for being a spider catching specialist (particularly orb-weaver spiders) without getting entangled in the web.

Breeding

A single young is born between November to January.

Predators and Threats

Tree snakes, hawks and owls.

Loss of habitat.

VESPERTILIONIDAE

Inland broad-nosed bat

Scotorepens balstoni

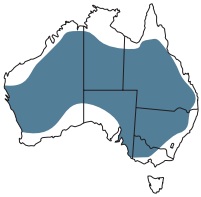
Description

Inland broad-nosed bats are about 50 mm from head to tail with dark-brown to pale, sandy fur. They have relatively slender ears and a broad, square-shaped muzzle with a pug-like nose. Their aggressive nature means they can be quite bitey when captured.

Identification of *S. balstoni* can be confused with *S. greyii* (which is smaller in size) and *S. orion* (which is less bi-coloured and darker in colour).

(M.Pennay)

Habitat



Colonies of up to 45 inland broad-nosed bats have been recorded in tree hollows and in the roofs of houses. They have even been seen roosting under the metal caps of power poles and in water down-pipes.

Their common status means that can be found over much of semi-arid and arid Australia - in open woodland, shrublands, mallee and grasslands.

Often seen as an early evening forager, they maintain continuous flight below the tree canopy and keep within fifteen metres of the ground. Their diet consists primarily of cockroaches, termites, crickets, cicadas, bugs, beetles, flies, moths and ants.

Breeding

Mating occurs before winter. Females give birth to one or two babies in summer. By five weeks old, young can fly on their own.

Predators and Threats

Tree snakes, hawks and owls.

Loss of habitat and modified fire regimes.

VESPERTILIONIDAE

Little broad-nosed bat

Scotorepens greyii

Description

The little broad-nosed bat has bi-coloured brown to grey-brown fur that is lighter at the base than the tips. Although small in size, this bat is known for its aggressive character and ability to deliver a forceful bite.

In south-east Queensland and north-east New South Wales, the central-eastern broad-nosed bat (*Scotorepens* spp.) is similar in size and appearance.

(L.Hall)

Habitat

The little broad-nosed bat roosts in tree hollows and occasionally disused buildings, in numbers averaging two to 20 individuals.

They can be found in monsoon forest, *Melaleuca* forest, tall open forest, open forest and woodland. They tend to be located near permanent water.

They are fast, agile fliers that forage on beetles, bugs and ants found in the tree canopy.

Breeding

Usually twin young are born in October and November.

Predators and Threats

Pythons, tree snakes, hawks and owls.

Loss of habitat and modified fire regimes.

VESPERTILIONIDAE

Eastern broad-nosed bat

Scotorepens orion

Description

Eastern broad-nosed bats are dark brown in colour with a broad, pug-like nose and relatively broad ears. They can be confused with *S. balstoni* but the eastern broad-nosed bat is darker in colour and less bi-coloured than its more inland cousin.

(L.Hall)

Habitat

The eastern broad-nosed bat is limited to the coastline east of the Great Dividing Range, with individuals also been identified around Cairns.

They have been found in rainforest, tall wet forest, vine forest, low open forest and in timbered urban areas. They have been identified roosting up to seven metres off the ground in the hollows of manna gums (*Eucalyptus viminalis*).

Little is known of their feeding habits.

Breeding

A single young is born in late November or early December.

Predators and Threats

Goannas, hawks and owls.

Tree hollow and habitat loss.

VESPERTILIONIDAE

Greater broad-nosed bat

Scoteanax rueppellii

Description

The greater broad-nosed bat is a large bat with reddish-brown to dark-brown fur.

This bat has a tendency to eat other bats when in captivity or caught with other bats in bat traps. Observations from researchers indicate that this may be a common behaviour in the wild as well.

(L.Hall)

Habitat

Greater broad-nosed bats are a tree-dwelling species that will occupy houses if no suitable roosts are available. They choose roosts in wet areas like rainforests, *Melaleuca* swamps, wet and dry schlerophyll forests as tree-lined creeks in open areas.

They tend to forage about five metres from the edge of tree lines and they will also perch-hunt. Beetles are their dominant prey but they will feed on spiders, moths, ants and large flies as well.

Breeding

Females form maternity colonies in tree hollows and will give birth to a single young in January.

Predators and Threats

Owls.

Loss of tree hollows, tree clearing and modified fire regimes.

VESPERTILIONIDAE

Inland forest bat

Vespadelus baverstocki

Description

Inland forest bats are about 39 mm long and weigh four grams. They are light sandy-brown to brownish-grey with pale belly fur.

Identification can be difficult as it has similarities to other *Vespadelus* species in the same geographical range - including southern forest bat (*V. regulus*), little forest bats (*V. vulturnus*), large forest bats (*V. darlingtoni*), inland cave bats (*V. finlaysoni*) and eastern cave bats (*V. troughtoni*).

(M.Sanders/Ecosmart Ecology)

Habitat

Living in arid and semi-arid zones limits inland forest bat's roosting sites to small hollows in stunted trees. Due to lack of natural habitat, they can also be found roosting in abandoned buildings.

The ecosystems they are commonly found in include *Acacia*, *Callitris* and *Casuarina* woodlands, mallee, open eucalypt woodland, shrub and grassland communities.

Inland forest bats are agile while foraging over large areas, presumably for flying insects, with rapid wing beats for easy manoeuvrability.

Breeding

Females become pregnant in November, gather to form maternity colonies and a single young is born in December. Mothers carry young for the first week but they are independent by January.

Predators and Threats

Goannas, snakes, hawks, owls and feral cats.

Loss of tree hollows, degradation of habitat through grazing and modified fire regimes.

VESPERTILIONIDAE

Finlayson's cave bat

Vespadelus finlaysoni

Description

The Finlayson's cave bat has black fur with the tips being a paler shade of rusty-brown or yellow-brown that continues on the head and down to the muzzle. The belly fur is lighter in colour.

Despite living in often harsh, dry and hot conditions, when individuals are caught for research they can stress and dehydrate very quickly making them more fragile than other *Vespadelus* species.


(T.Reardon)

Habitat

Finlayson's cave bats roost in the twilight area of caves, crevices or abandoned mines. Colonies of twenty are common but can increase to 500 individuals. Females will cluster together in large groups while males hangout in smaller groups in tight crevices. Young are known to cluster together, separately from the adults.

They forage for flying insects close to their roosting cave and can be found in grasslands, savannah woodlands, open forests, mulga and other shrub communities.

Breeding

One, sometimes two, young are born in November or December. Mothers will move deeper into the cave to nurse young and leave them overnight. Young are flying three to four weeks after birth.

Predators and Threats

Goannas, snakes, hawks, owls and feral cats.

Loss of tree hollows, degradation of habitat through grazing and modified fire regimes.

VESPERTILIONIDAE

Eastern forest bat

Vespadelus pumilus

Description

The eastern forest bat has dark chocolate-brown fur that is almost black at the base of the hairs. The belly fur is longer and lighter.

They experience short periods of torpor (a form of hibernation) in the early morning and late afternoon to allow them to conserve energy, even in the summer months.

Habitat

Preferring to roost in mature trees, eastern forest bats can be found in rainforest and wet sclerophyll forests where the gullies contain rainforest vegetation.

They roost in mature trees with small to large hollows. Maternity roost hollows have recorded up to 54 females; males are usually solitary.

They feed between the canopy and the understorey and their diet consists of moths, beetles, flies, ants/wasps and bugs.

Breeding

Little is known about their reproductive cycle, but it is known that they give birth to twin young (usually) in October to November.

Predators and Threats

Owls, hawks, pythons, goannas and feral cats.

Loss of old mines.

VESPERTILIONIDAE

Eastern cave bat

Vespadelus troughtoni

Description

Eastern cave bats have bi-coloured fur that is light-brown with ginger tips on its back and head, while its belly fur is dark at the base with light fawn tips.

(L.Hall)

Habitat

All recorded sightings of the eastern cave bat have been in close proximity to sandstone or volcanic escarpments with wet and dry forest to arid woodland nearby.

They often roost in small groups near the entrance of well lit caves, mines and occasionally buildings. Maternity colonies can reach over 200 adults.

They tend to forage in small areas over consecutive nights. They are capable of flying 500 metres over cleared land and have been observed hawking mosquitoes.

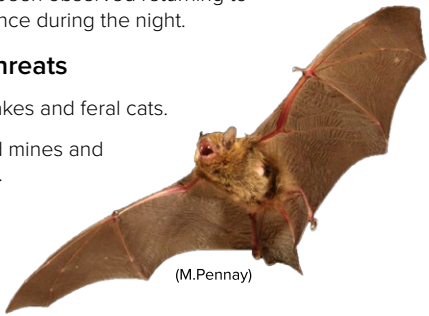
Breeding

In November, females give birth to one young and occasionally twins. Females have been observed returning to their young at least once during the night.

Predators and Threats

Hawks, owls, tree snakes and feral cats.

Loss of caves and old mines and modified fire regimes.



(M.Pennay)

VESPERTILIONIDAE

Little forest bat

Vespadelus vulturnus

Description

One of the smallest mammals in Australia, at 34-48 mm long and weighing just under four grams, little forest bats are a diminutive species that has bi-coloured fur, which is dark at the base and creamy white to grey at the tips.

It can be miss-identified as the inland forest bat (*V. baverstocki*) but it is usually paler than other *Vespasdelus* occupying the same range and has a shorter forearm length.


(L.Hall)

Habitat

Little forest bats prefer tall, open and riverine forest and can be found in mallee, mulga and brigalow woodland.

Hollows with small entrances are preferred, but they will shelter in buildings. Colony sizes can range from a solitary individual to 120 bats.

Their small size allows them to have great aerial agility when foraging for food. They fly below the canopy and often very close to the foliage, but they don't feed directly from the ground or from foliage. Their diet consists of moths, bugs and beetles with the occasional spiders, grasshoppers and lacewings.

Breeding

Single young, and occasionally twins, are born in late October to December.

Predators and Threats

Hawks, owls, goannas and feral cats.

Loss of tree roosts, land clearing and modified fire regimes.

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Index

R

S

T

V

W

Y

Eastern bent-wing bats leaving roost site after dusk (L.Hall)

Burnett Mary
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Looking for more information about the bats of Southern Queensland?

The **All About Bats** website has a great collection of information about bats, including the species identified in this book, additional resources and education materials.