

# Community Bat Monitoring Program with the Mid Murray LAP

The Mid Murray Local Action Planning Committee (Mid Murray LAP) has been coordinating a Community Bat Monitoring Program since 2003. This program has been part of the 'Bats for Biodiversity' project initiated by the Mt Pleasant Natural Resource Centre and the Upper Torrens Landcare Group. Over the years, many landholders have borrowed an Anabat detector to record the species they have on their properties.



Harp nets

An Anabat detector is electronic equipment that allows the passive monitoring of bats by detecting and recording their ultrasonic echolocation calls. The echolocation calls of bats are unique to each species and can be used to identify the bats.

The Mid Murray LAP's Community Bat Monitoring program includes the Anabat detectors being used any month of the year, bat trapping workshops for community members, plus permanent monitoring stations at Cambrai Area School's farm Meldanda, and Devon Downs wetland.



Bat workshop at Devon Downs



Bat boxes are used only as a short term option if there are no suitable natural hollows nearby.

Other Local Action Planning Groups throughout South Australia Murray Region are also supporting their local community with bat monitoring. If you would like to contact your local group see contact details.



## Acknowledgements

Aimee Linke, Chris Grant and Terry Reardon  
Photographs by Terry Reardon, Steve Bourne and Aimee Linke

# BATS

## of South Australia's Murray Region

Bats are one of the largest groups of mammals: with approximately 1000 species, they make up nearly a quarter of the world's mammal species. There are around 90 species in Australia. Bats are unlike other small mammals in that they can live for a long time, at least 10 years, and are the only mammal that have the ability of sustainable flight.

Bats belong to the Order *Chiroptera*, which means hand-wing. *Microchiroptera* (microbats) and *Megachiroptera* (megabats) are the two main groups (suborders). There are 16 species of microbats found in South Australia's Murray Region.

The South Australia's Murray Region is defined as the Catchment area of the Murray River from the South Australian border to the Murray Mouth.

All of the bat species in South Australia's Murray Valley are insectivorous, with the exception of the endangered *Myotis macropus* that also catches fish with its large hind feet.



All microbat species in the region use tree hollows as the main daytime roost sites. The large old or dead River Red Gums that occur along the rivers and creeks are vital roosting habitat for bats.

Even isolated paddock trees play a key role in bat conservation. Mallee and Black Box also form hollows that are home to many species of bat.

Often bats roost singly, but sometimes breeding colonies of around 20-50 individuals can be present in tree-hollows.





# About Microbats

## Echolocation

Microbats are nocturnal animals and can often be seen at dusk fluttering around in search of food. Microbats feed at night to avoid competition with birds and to reduce the chances of predation.

They are not blind as the common myth would have you believe, they actually have good eyesight although they mainly depend upon echolocation (sonar) to navigate at night. Echolocation is when a bat emits pulses of high frequency sound from the nose or mouth and listens for the echoes with its ears. The sound pulses bounce off objects such as trees and insects enabling the bat to navigate and find insect prey.

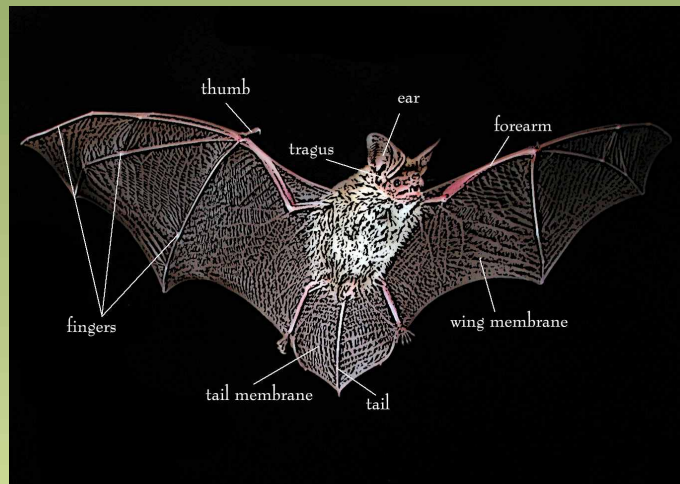
## Foraging

Microbats are insectivorous and can eat a third of their own body weight in insects in one night. Some species are capable of catching up to 500 insects an hour, which equates to an insect every 8 seconds. Most micro-bats catch insects in the air and eat them whilst in flight. They accomplish this by directly catching in their mouth or by scooping them up in their wing or tail membrane and transferring the insect to their mouth. Other species land on the ground or vegetation to catch insects, a technique called 'gleaning'.

Microbats are valuable natural insect pest controllers: they have a vital role in reducing the spread of mosquito borne diseases around the world and are also used to control pests at many organic farms.

## Torpor

Micro-bats need to eat a lot because they have a high demand for energy (for flight and to keep warm). Micro-bats can however conserve energy by entering into a state of inactivity called torpor. Bats usually enter torpor in the cold months when insects are less abundant. A bat in torpor allows its body temperature to decrease to a couple of degrees above the surrounding temperature. Bats at roost hang upside down, supported by locking tendons on their claws which uses no energy at all. Bats should not be disturbed when they are in torpor.



## Roosting

Most microbat species in the region use tree hollows where available, there are however two species of bats found roosting in caves and rock holes in the cliffs along the River Murray.

Many bat species can be found roosting in buildings like shacks, sheds and houses. If bats are roosting in buildings, consideration may need to be given to the available bat habitat on your property.

## Your Property

Some ways that bats can be encouraged to be on your property are in;

- Maintain existing patches remnant vegetation and woodland;
- Connect patches of bush where possible as some bat species don't like to fly over open paddocks;
- Revegetate where possible with a variety of shrubs, trees and understorey species to increase bat diversity and foraging habitat;
- Ensure that large old or dead trees are left standing to provide valuable hollows for roosting;
- Reduce any use of insecticides as this can poison bats when they consume insects that have ingested chemicals;
- Maintain clean watercourses and dams as they provide drinking water for bats and insect habitat;
- Help protect bats by keeping your cat indoors;
- Erect bat boxes if there are no available hollows as a short term option only as they require maintenance, natural habitat is preferable.

Tail to tail membrane for the three families of bats in SA Murray Region



Sheathtail

Freetail

Ordinary

## Bat Handling

If you find a bat or bat colony it should be reported to the Department for Environment and Heritage (DEH) on 8204 1910

Do not attempt to handle bats; if you find an injured bat then contact DEH, a vet or Adelaide Bat Care Rescue Line 0422 182 443. If it's vital to handle an injured bat to transport it to a vet /DEH you should wear thick gloves or use a towel to avoid being bitten.

Anyone who is bitten by a bat should immediately seek medical advice.

## Contacts



Mid Murray LAP  
Project Manager Ph: (08) 8564 6044  
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## Other useful publications

Australian Bats, 1998, Sue Churchill

Action Plan for Australian Bats, 1991, Ann Duncan, G Barry Baker and Narelle Montgomery

A Guide to the bats of South Australia, 1991, Terence B. Reardon and Stanley C. Flavel

How Bat Friendly is Your Property, Mt Pleasant Natural Resource Centre SA

Bats of the Mount Lofty Ranges South Australia, 2001, Data Sheet, Mt Pleasant Natural Resource Centre SA

Bats of the Limestone Coast. The South East of South Australia, Friends of Naracoorte Caves

## Websites

Australasian Bat Society Inc - [www.ausbats.org.au](http://www.ausbats.org.au)

Bat Conservation International - [www.batcon.org/](http://www.batcon.org/)

Mt Pleasant Natural Resource Centre - [www.mpnrc.org.au/bats.php](http://www.mpnrc.org.au/bats.php)

Adelaide Bat Care - [www.adelaidebatcare.com.au](http://www.adelaidebatcare.com.au)





### Inland Forest Bat *Vespadelus baverstocki*

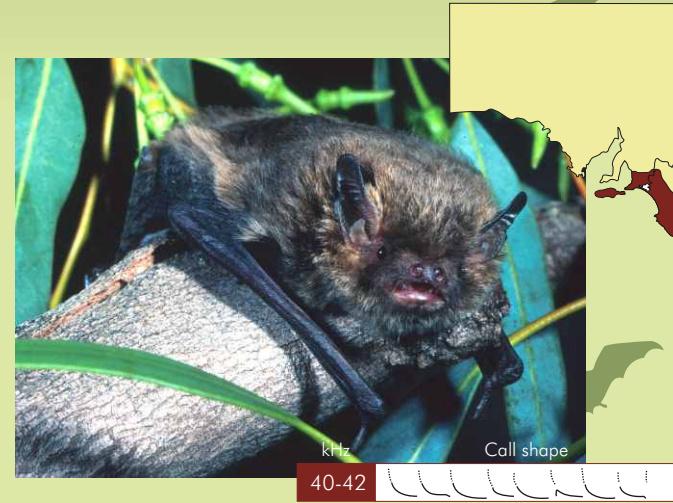
**Forearm:** 26.5-31.4mm **Weight:** 3.6-7g

**Conservation Status:** Common.

**Distribution:** Endemic to Australia, inland arid to semi arid regions.

**Description:** A very small bat with two distinct colour forms one a light sandy brown the other is brownish grey. The face is greyish pink and the ears and wings are pale grey. **Habitat:** Found in River Red Gum Woodland, grasslands, shrublands, open eucalypt woodland, Acacia, Callitris and Casuarina Woodlands. **Roost habit:** In tree hollows or abandoned buildings in colonies up to 60 individuals.

**Diet and foraging:** Their diet has not been studied, they are very maneuverable fliers with a rapid wing beat foraging over a wide area.



### Large Forest Bat *Vespadelus darlingtoni*

**Forearm:** 32.5-37.2mm **Weight:** 6-8.3g

**Conservation Status:** Common.

**Distribution:** Endemic to Australia, approximately corresponding with the 500mm rainfall isohyet. **Description:** A large bat with long fur that is dark brown to rusty brown, slightly darker at the base than the tip, with dark skin. **Habitat:** They are found in dry sclerophyll forest and coastal mallee. **Roost habit:** They live in tree hollows and buildings in colonies of females up to 60 but more often in smaller groups of 5 or 6 while males are solitary. **Diet and foraging:** They tend to be more adapted to cooler climates and can forage on mild winter nights when other species are hibernating. They are highly manoeuvrable foraging amongst foliage between tree canopy and understorey. They have a rapid wing beat and catch insects like moths, beetles, flies and ants.

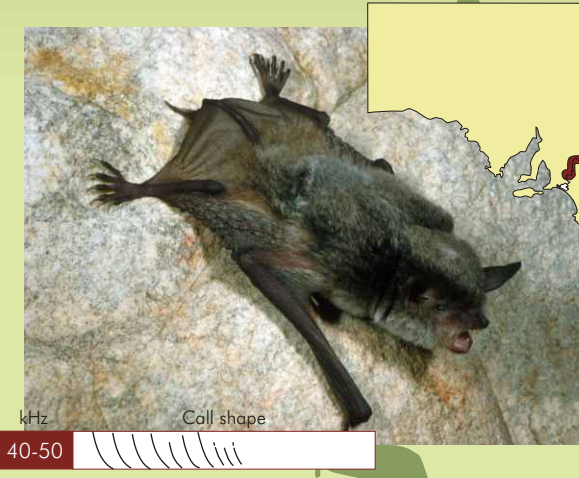
### Lesser Long-eared Bat *Nyctophilus geoffroyi*

**Forearm:** 3.2-41.7mm **Weight:** 4.6-14.5g

**Conservation Status:** Common.

**Distribution:** Endemic to Australia, throughout all of SA.

**Description:** The fur is light grey on the back with lighter fur on the belly which is often white. The fur is bicoloured being very dark at the base. They have a high ridge on the muzzle that is separated by a membrane of skin creating a 'Y-shaped' groove. **Habitat:** Ranges from grasslands, urban areas, woodlands and Eucalypt Forests. **Roost habit:** Under peeling bark, crevices, tree hollows, under piles of bricks and old hanging clothing. Commonly roost alone or groups of 2-3, maternity colonies of 10-15 can be formed often with a single male. **Diet and foraging:** They are both gleaners, taking prey from foliage or the ground, and aerial foragers, catching prey in the air, most commonly eating moths, but also wingless insects like ants and spiders.



### Large-footed Myotis *Myotis macropus*

**Forearm:** 37.2-42.9mm **Weight:** 9-14.9g

**Conservation Status:** Endangered in SA.

**Distribution:** Primarily coastal rarely further than 100km inland except along major rivers like the Murray River. **Description:** These bats can be distinguished by their very large feet which are more than 8mm long. Its fur colour varies from reddish brown to dark grey. **Habitat:** They can live in most habitat types as long as there is water nearby like mangroves, Paperbark Swamps, open woodland and River Red Gum Woodlands. **Roost habit:** These bats are commonly known to be cave dwellers but can also be found in tree hollows, under bridges, tunnels and mines. They often roost in colonies of 10-15 but have been found in colonies of several hundred. **Diet and foraging:** they feed mainly over water and rake their long feet across the surface to catch Water insects, such as boatmen, mayflies and water striders as well as small fish, they also forage aerially for moths and beetles.

### Little Forest Bat *Vespadelus vulturnus*

**Forearm:** 26.2-32.8mm **Weight:** 3-6.8g

**Conservation Status:** Common.

**Distribution:** Endemic to Australia, south-eastern SA. **Description:** South Australia's smallest bat, the fur is variable from brown to pale grey with a lighter belly. The hair is darker at the base and creamy white to brown or grey for the top third. The ears and wings are pale. **Habitat:** Found in dry woodland, wet and dry sclerophyll forest, River Red Gum and Mallee. **Roost habit:** Tree hollows and house roofs in small colonies usually 5-18, males and females roosting separately with females tending to occupy sites that can be used all year.

**Diet and foraging:** Close to vegetation within the upper levels of the forest understorey and the spaces between trees commonly 3-8m from the ground, always below the canopy preferring moths beetles and flies, with larger prey being taken back to the roost to consume, they can also take off from the ground with ease.

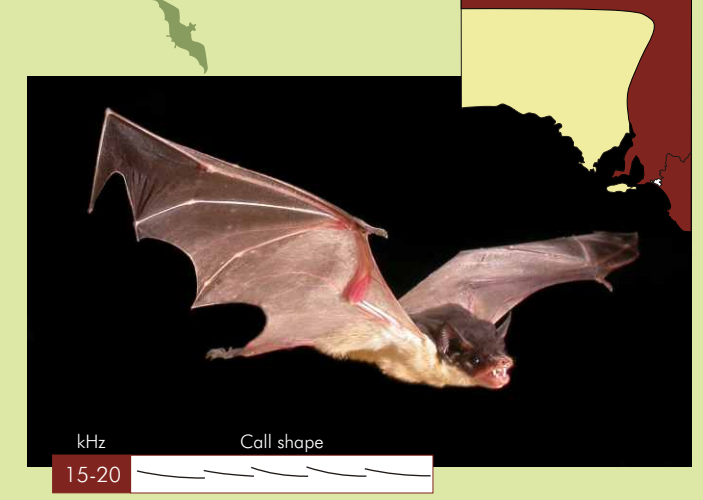


### Yellow-bellied Sheathtail Bat *Saccolaimus flaviventris*

**Forearm:** 65.7-82.1mm **Weight:** 30-60g

**Conservation Status:** Rare.

**Distribution:** Endemic to Australia, they occur across the eastern section of SA. **Description:** They are a large bat with shiny black fur on the back and bright white or yellow fur on the belly, which extends to the shoulders and behind the ears. The males have a large throat pouch and a smaller secondary one. Females have a naked area and a ridge of skin instead of throat pouch and neither sex has a wing pouch. **Habitat:** These bats are found in most habitats from Acacia shrubland, grasslands, Mallee, deserts, and open woodland. **Roost habit:** They roost in tree hollows and are mainly solitary but can form small groups of 2-6 in late winter and spring. **Diet and foraging:** They forage above the canopy and consume mainly beetles, they fly high and fast which probably contributes to low capture rate in nets.



### Southern Forest Bat *Vespadelus regulus*

**Forearm:** 28-34.4mm **Weight:** 3.6-7g

**Conservation Status:** Common.

**Distribution:** Endemic to Australia, found in southern SA.

**Description:** A small reddish brown bat with a paler belly, with grey wings and ears. **Habitat:** Found in dry sclerophyll forest, shrublands, low shrubland woodland, mallee and open woodland.

**Roost habit:** A tree-hollow dweller and may live in man-made structures in colonies up to 100 individuals. Males tend to roost separate from females except during the mating season.

**Diet and foraging:** They are aerial insectivores, flying close to vegetation and understorey. They can easily take off from the ground. They prefer a diet of moths and other small flying insects like beetles, flies and bugs.



### Western or Inland Broad-nosed Bat *Scotorepens balstoni*

**Forearm:** 32-40.5mm **Weight:** 6.3-12.5g

**Conservation Status:** Common.

**Distribution:** Endemic to Australia, throughout arid and semi-arid regions, south of latitude 19°. **Description:** The fur varies from dark brown to a pale sandy colour, often a light grey brown on the back and pale brown belly. The fur is bicoloured with distinctive darker bases. The muzzle is broad and square in shape when viewed from above. The ears are slender and long. **Habitat:** They can be found along River red gum lined waterways, open woodland, shrublands, grasslands and Mallee.

**Roost habit:** Commonly roost in hollows and houses. **Diet and foraging:** Often forage early amongst trees and the edge of forests, extending out into open spaces staying within 15m of the ground and do not forage above the canopy. They feed on cockroaches, termites, crickets, bugs, moths and beetles.



### Little Pied Bat *Chalinolobus picatus*

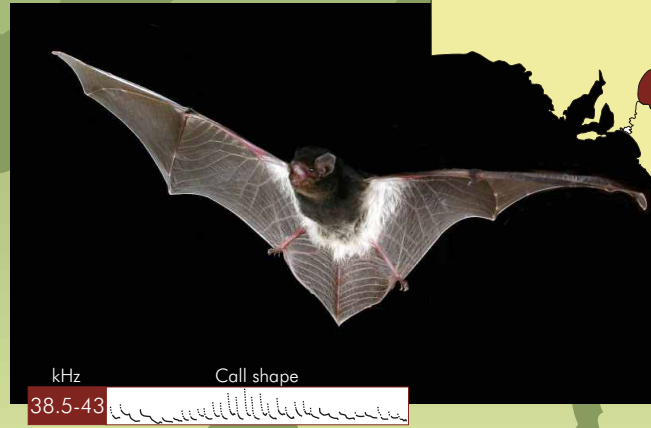
**Forearm:** 32-36.1mm **Weight:** 4.3-7.1g

**Conservation Status:** Endangered.

**Distribution:** Endemic to Australia, north eastern section of SA.

**Description:** The smallest bat in the genus with distinctive glossy black fur on its back that extends onto the tail membrane ending in a fringe of brownish black. The belly is faintly grey with two white stripes along each side of the body that join in the pubic region to form a V. They have small ears which are too short to meet sometimes barely touching when pressed together across the top of the head. **Habitat:** Found in open dry forests and woodlands, Mulga woodlands, Chenopod shrublands, Mallee and Callitris forest. **Roost habit:** They roost in caves, trees and abandoned houses or mines, they occur in small colonies of less than 10.

**Diet and foraging:** They are known to feed exclusively on moths.



### Eastern Freetail Bat *Mormopterus* (Species 2)

**Forearm:** 30-36mm **Weight:** 7-15g

**Conservation Status:** Uncertain.

**Distribution:** They are probably limited in range along the Murray River. **Description:** Small grey bat with protruding tail and flattened head very similar to southern and inland freetail bats. Males have even smaller penis than Southern or Inland freetail bats *M. planiceps* sp 1.

**Roost habit:** Dwelling in tree hollows and buildings they form colonies of 10 to 30 individuals. **Diet and foraging:** They are rapid and high-flyers feeding above the tree canopy on a diet of beetles, moths and bugs.



### Inland Freetail Bat *Mormopterus planiceps* (Species 3 small penis form)

**Forearm:** 32.4-40.2mm **Weight:** 7.9-14.8g

**Conservation Status:** Common.

**Distribution:** Endemic to Australia, found in arid to semi-arid areas of SA.

**Description:** The fur on the back has a creamy white base and a light brown to light grey brown tips. The skin on the wings and ears is pink to pale grey. They differ from the Southern and Western freetail bats by having a shorter penis which is less than 5mm long and the fur is often shorter and lighter grey. Females at this stage cannot be distinguished between species.

**Habitat:** More common in arid regions in open woodland, shrubland, Cypress Pine Woodlands, Mulga and Myall Woodlands, grasslands, Chenopod shrublands and River Red Gum lined watercourses.

**Roost habit:** Mainly found in tree hollows. **Diet and foraging:** Forage in open areas or over water catching flies and ants both winged and wingless.



### Southern Freetail Bat *Mormopterus planiceps* (Species 4 long penis form)

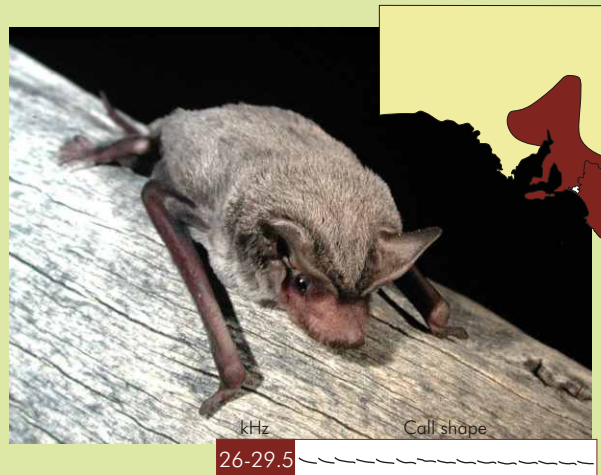
**Forearm:** 30.6-35.7mm **Weight:** 6.8-13g

**Conservation Status:** Common.

**Distribution:** Endemic to Australia, found across south eastern SA.

**Description:** The males can be distinguished from other *Mormopterus* species by their penis, this one is known as the long penis form which is more than 9mm long. The fur is longer, shaggier and often darker than the Inland freetail bat. The fur on the back has creamy-white bases and dark grey-brown tips; the belly fur is slightly lighter than the back. The skin on the ears, wings and face is dark grey.

**Habitat:** They are found in Cypress Pine Woodlands, Mallee, dry open forest and woodland habitats like River Red Gum. **Roost habit:** They roost in tree hollows and houses, females in colonies of 30 or 40 and males in smaller groups of 3 or 4. **Diet and foraging:** Typically forage between trees, above forest canopy, the edge of remnant vegetation and the ground, eating moths, beetles, bugs and ants.



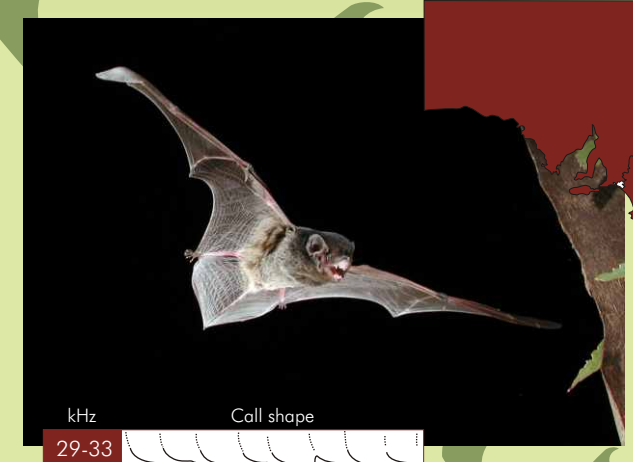
### Chocolate Wattled bat *Chalinolobus morio*

**Forearm:** 34.8-39.1mm **Weight:** 5.5-10.3g

**Conservation Status:** Common.

**Distribution:** Endemic to Australia, found across southern SA except one inland population. **Description:** The fur is chocolate brown on the back and belly. The head is sharply domed with a short muzzle often with a distinct ridge of fur. The ears are broad and short that barely meets when pressed together at the top of the head. The tragus is strongly curved forward with a pointed tip and is short and broad. **Habitat:** They occur in woodlands, Mallee, shrublands and treeless regions like the Nullabor, within inland regions they tend to be found along watercourses where there are larger trees. **Roost habit:** In caves along the Nullabor, tree hollows, Fairy Martin nests, culverts, under bridges and under loose bark on trees. Females can be found in colonies of 6 to 70, the males are solitary, and larger colonies up to 400 have been found in caves.

**Diet and foraging:** They forage mainly in the open zone between the top of the understorey and the canopy, capturing moths, beetles, flies and bugs.



### Greater Long-eared Bat *Nyctophilus timoriensis*

**Forearm:** 39-50mm **Weight:** 11-20g

**Conservation Status:** Vulnerable.

**Distribution:** Generally distributed in semi-arid environments across southern SA. **Description:** The fur is dark grey-brown and slightly lighter at the tips, it has a low ridge on the muzzle and a shallow vertical groove in the front. **Habitat:** Found in tall eucalypt forests, Mallee and Black Box Woodland. **Roost habit:** In tree hollows, deep fissures and under loose bark. **Diet and foraging:** Mainly forage in the understorey and on the ground for non-flying insects like caterpillars, scorpions and beetles.

### Gould's Wattled Bat *Chalinolobus gouldii*

**Forearm:** 35-48mm **Weight:** 10-30g

**Conservation Status:** Common.

**Distribution:** Found throughout all of SA. **Description:** The fur is brown on the back and belly and black on the head and shoulders. They have a short muzzle and ears, the ears are also broad and the back edge of the ear extends to form a large lobe of skin (wattle) at the corner of the mouth.

**Habitat:** Found in all habitats from deserts to urban areas. **Roost habit:** Commonly in tree hollows like River Red Gums as well as among leaves and buildings. Females usually form colonies of 8 to 40 in tree hollows, while males are often solitary. **Diet and foraging:** They forage below the tree canopy and along the edge of forests, they eat mainly moths but also ants, bugs and beetles.



### White-striped Freetail Bat *Tadarida australis*

**Forearm:** 59.5-62.5mm (male) 59-63.1mm (female)

**Weight:** 33-59.5g (male) 34-44g (females)

**Conservation Status:** Common.

**Distribution:** Endemic to Australia, found across all of SA.

**Description:** A large dark brown to black bat with two white stripes along the sides of the belly and onto the wings. The ears are not joined at the top of the head and both sexes have a throat pouch and wrinkled lips. **Habitat:** They use a wide range including urban areas, grasslands, forests, woodland and shrubland. **Roost habit:** They are tree dwellers, roosting alone or in groups up to 20. **Diet and foraging:** They are fast flying and can sustain flight for many hours foraging in open areas or above canopy as they do not manoeuvre very well. They are agile on the ground where they consume ants and non-flying beetles. They also eat moths, beetles, bugs and grasshoppers when in flight.