

Bat Roosts

What are Microbats?

Microbats (Microchiropteran bats) are relatively small mammals with weights ranging from a mere 3 grams up to 40 grams. These species are specially adapted for flight with wing membranes up to 25cm. They use both eye sight and echolocation for finding their way around and locating prey, being mostly insects, even on the darkest nights.

These bats represent a diverse and significant component of the mammal fauna of NSW. They comprise about 25% of Australia's mammals and in north-eastern NSW, for example this ratio increases to almost 39%. Nineteen microbat species are listed as threatened under the *NSW Threatened Species Conservation Act 1995* (TSC Act).

Where do they roost?

All microbats require roost sites for both day and night time resting, predator protection, social contact and breeding.

Individual species are very specific in their choice of roost sites ranging from hollows and cavities in trees to rock overhangs, caves and subterranean tunnels. They may also use stormwater culverts, flood mitigation structures and the underside of timber and concrete bridges. These sites often alternate due to different weather, seasons or even on a daily basis.

Refer to Advisory Note 1- Hollow Bearing Trees for more information on the importance of trees with hollows for roosting and as maternity sites for bats.

Significant Roost Sites

Whilst all bat roost sites are important for day to day survival, roosts used for winter, cold weather hibernation and breeding (maternity sites) are most significant.

These sites are often used seasonally. This means that the species may only be present at certain times of the year. To determine the significance of roost sites, assessments may be required over a number of seasons.

Roost and maternity sites for bats can differ depending on each bat's specific requirements. Broadly, they can be separated into those species which exclusively use tree hollows, those that may use tree hollows as well as other structures such as bridges, buildings or abandoned bird

nest (e.g. the Golden-tipped Bat often uses the abandoned nests of Brown Gerygones or scrub wrens), and those bats that use subterranean roost sites (caves, mine shafts or tunnels).

Whilst bats may use small tree hollows, they tend to select roost sites in hollows in the largest trees available.

Numbers of bats (10 or more) often roost together in the same tree hollow and in caves and disused mines, hundreds and often thousands of bats may roost together, particularly during breeding.

Significant subterranean roost sites often have a combination of mainly near- horizontal tunnels that may range from several metres long to deep complex mines or caves with interconnecting passageways. Vertical shafts are infrequently used.

Observing the use of tree hollows and caves or mines for bats may be undertaken by watching the entrances to hollows in trees and caves and mines at dusk and observing against the night sky whether any bats are leaving their day-time roost sites. Where such bat activity is observed, these trees and the vegetation surrounding caves and mines should be protected.

In the absence of such surveys, retention of a range of hollow-bearing trees (preferably the largest trees) and protection of vegetation around the entrance to caves and mine shafts is paramount to protecting the diversity of bat species.

What can you do?

Forestry operations can impact on bats by:

- killing of individuals or, in some cases, significant numbers of bats (e.g. destruction of maternity tree hollow);
- the destruction and depletion of roost sites;
- reduction of feeding opportunities through disturbance and removal of habitat;
- reduction in the availability and abundance of food due to changes in insect populations; and
- alteration of forest structure which may affect foraging activity and increase predation.



Southern Forest Bat

John Turnbull



Recorded Roost sites of Microbats in NSW

Scientific Name	Common Name	Roost sites	Status
<i>Nyctimene robinsoni</i>	Eastern Tube-nosed Bat	Foliage	V
<i>Syconycteris australis</i>	Common Blossom-bat	Foliage	V
<i>Saccolaimus flaviventris</i>	Yellow-bellied Sheath-tail-bat	Hollows, bark, nests, structures	V
<i>Rhinolophus megaphyllus</i>	Eastern Horseshoe Bat	Caves, structures	-
<i>Chalinolobus dwyeri</i>	Large-eared Pied Bat	Cave, bird nests	V
<i>Chalinolobus gouldii</i>	Gould's Wattled Bat	Hollows, foliage, structures	-
<i>Chalinolobus morio</i>	Chocolate Wattled Bat	Hollows, bark, nests, structures	-
<i>Chalinolobus nigrogriseus</i>	Hoary Wattled Bat	Hollows, rock crevices	V
<i>Chalinolobus picatus</i>	Little Pied Bat	Caves, hollows, structures	V
<i>Falsistrellus tasmaniensis</i>	Eastern False Pipistrelle	Hollows, bark, structures, caves	V
<i>Kerivoula papuensis</i>	Golden-tipped Bat	Bird nests, hollows	V
<i>Miniopterus australis</i>	Little Bentwing-bat	Caves, hollows, structures	V
<i>Miniopterus schreibersii oceanensis</i>	Eastern Bentwing-bat	Caves, structures	V
<i>Myotis adversus</i>	Large-footed Myotis	Caves, hollows, structures, foliage	V
<i>Nyctophilus bifax</i>	Eastern Long-eared Bat	Hollows, foliage, bark	V
<i>Nyctophilus geoffroyi</i>	Lesser Long-eared Bat	Hollows, bark, structures	-
<i>Nyctophilus gouldii</i>	Gould's Long-eared Bat	Hollows, bark	-
<i>Nyctophilus timoriensis</i>	Eastern Long-eared Bat	Hollows, bark	V
<i>Scoteanax rueppellii</i>	Greater Broad-nosed Bat	Hollows, bark, structures	V
<i>Scotorepans balstoni</i>	Inland Broad-nosed Bat	Hollows, structures	-
<i>Scotorepans greyii</i>	Little Broad-nosed Bat	Hollows, structures	-
<i>Scotorepans orion</i>	Eastern Broad-nosed Bat	Hollows, structures	-
<i>Vespadelus baverstocki</i>	Inland Forest Bat	Hollows, structures	V
<i>Vespadelus darlingtoni</i>	Large Forest Bat	Hollows, structures	-
<i>Vespadelus pumilus</i>	Eastern Forest Bat	Hollows, structures	-
<i>Vespadelus regulus</i>	Southern Forest Bat	Hollows, structures	-
<i>Vespadelus troughtoni</i>	Eastern Cave Bat	Caves, bird nests, structures	V
<i>Vespadelus vulturinus</i>	Little Forest Bat	Hollows, structures	-
<i>Mormopterus beccarii</i>	Beccari's Freetail-bat	Hollows, bark, structures	V
<i>Mormopterus norfolkensis</i>	Eastern Freetail-bat	Hollows, bark, structures	V
<i>Mormopterus</i> species	Eastern Freetail Bat	Hollows	-
<i>Mormopterus</i> species	Inland Freetail Bat	Hollows, structures	-
<i>Mormopterus</i> species	Southern Freetail Bat	Hollows, structures	-
<i>Mormopterus</i> 'Species 6'	Hairy-nosed Freetail Bat	Hollows, bark, structures	V
<i>Nyctinomus australis</i>	White-striped Freetail Bat	Hollows	-

(V) = Vulnerable Species listed in the Threatened Species Conservation Act 1995, (P) = Protected under the National Parks and Wildlife Act 1974

Bats are vulnerable to disturbance of roost sites such as tree hollows, caves and subterranean tunnel roost sites, as large numbers representing significant proportions of regional populations can congregate in one roost site for protection and breeding.

In particular, disturbance of maternity colonies during spring and summer breeding and raising of young and during winter when animals congregate for warmth, can result in a significant impact on regional populations.

Protection of trees with hollows, trees with defoliating (loose) bark and rock overhangs,

caves and subterranean tunnels are vital for the conservation of microbats.

References and Further Reading

- Thomson, B. (2002) Australian Handbook for the Conservation of Bats in Mines and Artificial Cave-Bat Habitats, Ameer Paper Number 15.
- Australian Centre for Mining Environmental Research Website: www.acmer.com.au
- DECC: www.environment.nsw.gov.au