

Bats in caves, mines and bridges: do not disturb!

What should you do if you are responsible for managing sites that may be used by roosting bats?

- Before making any management changes, the site should be assessed for bats.
- For example, if you are required to restrict access to a cave/mine or undertake maintenance or the demolition of a bridge or jetty, a bat-specific assessment should be undertaken prior to the commencement of any work related activities.
- Contractors should take a precautionary approach; speak to your state government wildlife agency, local government environment officer and/or bat specialist.
- Don't enter caves, mines or aqueducts unless you are experienced and qualified to do so. There are inherent dangers, including oxygen deprivation, toxic gases, flash floods, collapsed sections and vertical drops.

REMEMBER!

Bats are protected species in all states of Australia. Killing, injuring, disturbing bats or their habitat intentionally or unintentionally may lead to legal action.

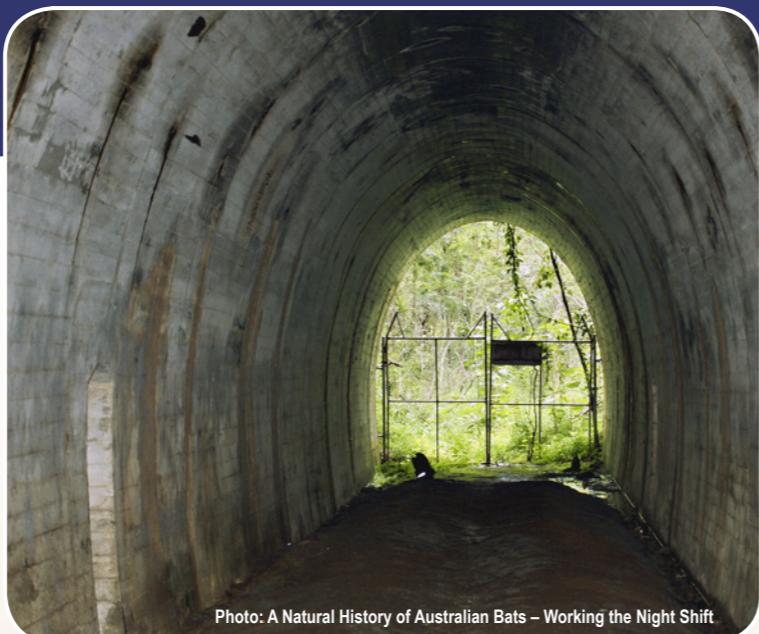


Photo: A Natural History of Australian Bats – Working the Night Shift

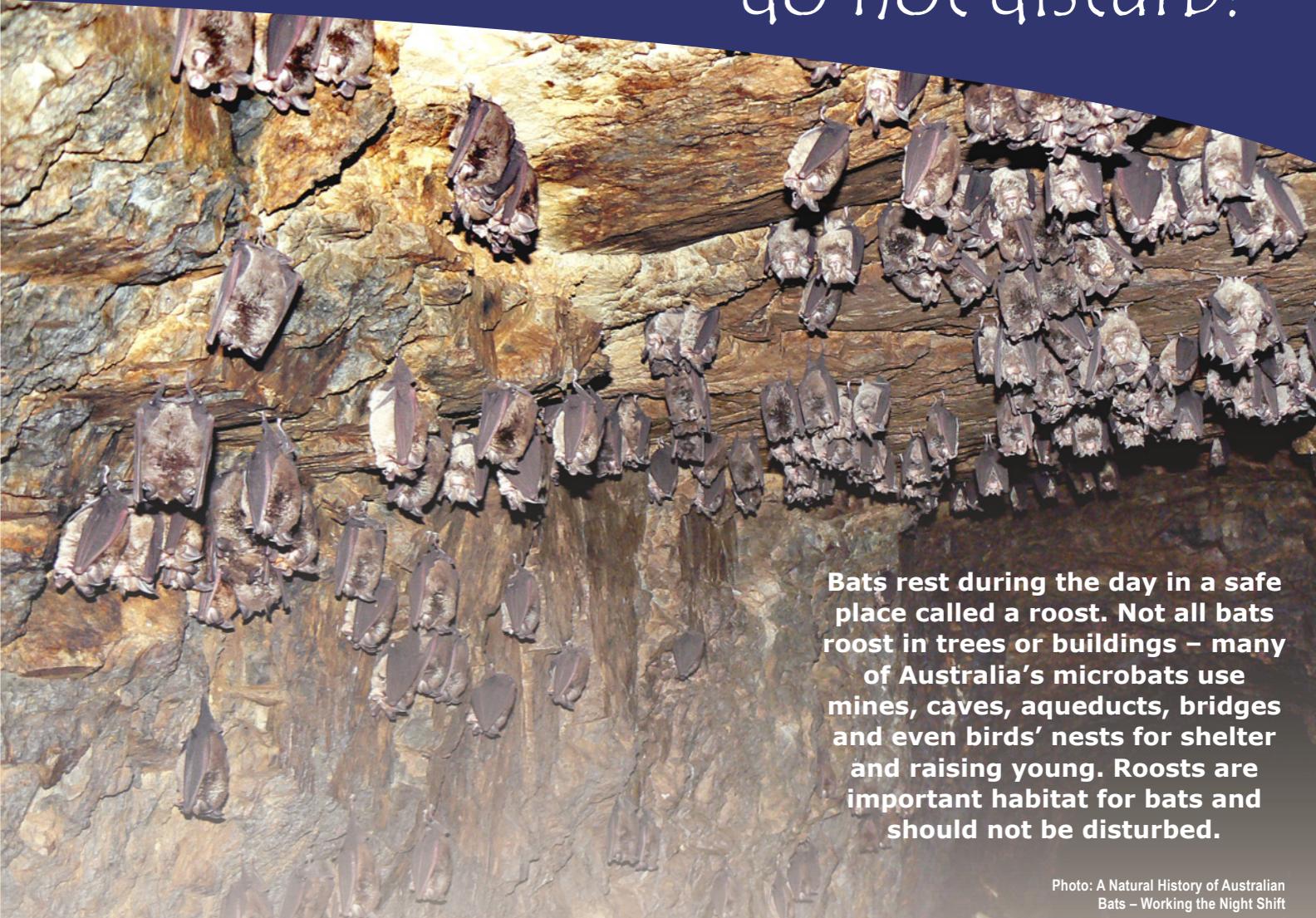
- If you are inspecting a site, look up and around on the walls and ceilings of caves, mines and aqueducts, in the cracks and crevices of old timber bridges and joins of concrete ones, and inside nests of swallows or martins. The first tell-tale sign of roosting bats is the presence of bat droppings on floors and walls of caves and mines, and under bridges and other structures.



Photo: A Natural History of Australian Bats – Working the Night Shift



Southern Bent-wing Bat (*Miniopterus schreibersii bassanii*). Photo Terry Reardon



Bats rest during the day in a safe place called a roost. Not all bats roost in trees or buildings – many of Australia's microbats use mines, caves, aqueducts, bridges and even birds' nests for shelter and raising young. Roosts are important habitat for bats and should not be disturbed.

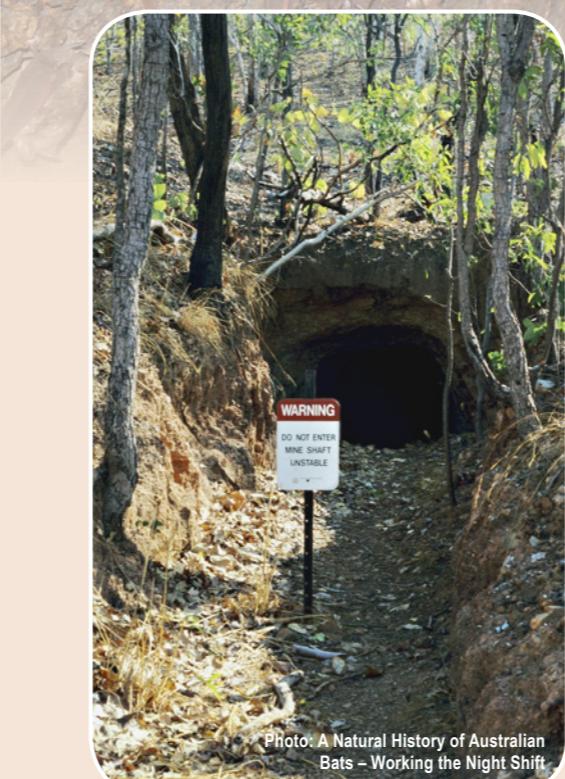


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Why do bats need roosts?

- Bats are nocturnal animals and hunt for their food at night. They need a safe place to shelter during the day where they can rest and socialise, away from predators and extreme daytime temperatures. Bats select roosts with the right temperature, humidity and light conditions.
- Some bat species roost individually or in small groups, while many bats are colonial roosting species, where animals congregate together in a roost. Eastern Bent-wing Bats (*Miniopterus schreibersii oceanensis*), for example, can roost in groups of tens of thousands!
- Bats are long-lived animals and they typically give birth only once a year, to one or two pups, so they need a protected space for rearing their young, to ensure their survival.
- Bats have a high metabolic rate when they are active. During cooler weather, they often enter a state of "torpor" (a short form of hibernation) where they drop their body temperature to within 2° of the ambient temperature, reduce their oxygen consumption, heart rate and restrict blood flow to vital organs to save energy.

When roosting under bridges, bats can retreat into drainage holes and birds nests.



Photo: Rob Gration



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What kinds of structures do bats use as roosts?

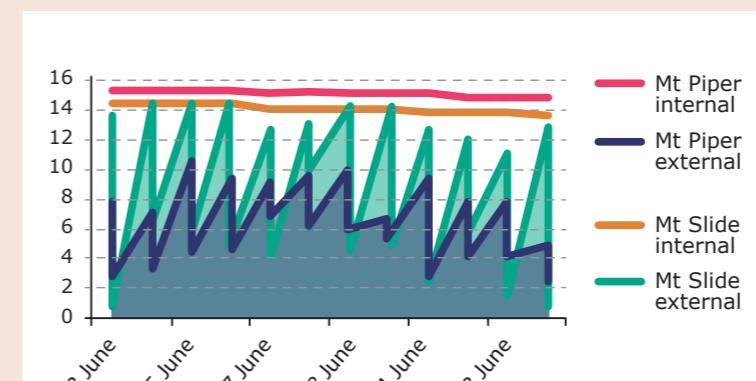
- Mines, caves, and other underground structures can provide perfect conditions for bats to rest and give birth. Bats may hang from the walls as well as the ceilings of these places.
- When using disused mines, bats prefer the horizontal adits, and do not typically use vertical shafts.
- Bats may also roost in bridges, aqueducts, jetties and other concrete or timber structures. They can be found in expansion joints, crane lifting points, cracks and crevices in splitting timber, and on the top of supporting beams and poles. Large-footed Myotis (*Myotis macropus*) typically roost near water, and can roost in bridges and jetties.
- Some bats roost in small numbers in birds' nests (especially bird species such as swallows and martins which build mud pellet nests under structures like bridges and eaves).



Photo: Lindy Lumsden

What should you do if you're in an area where bats may be roosting?

- DON'T undertake activities that disturb bats at critical times of their life cycle, e.g. during daylight hours, during winter months and during the maternity season (mid-summer).
- DO move away from the roosting site as quickly and quietly as possible.
- DO notify your state wildlife agency.
- DON'T handle bats unless you are experienced and qualified to do so.
- DON'T let the general public know the bats' location, because people may disturb or harass the bats once the location of their roost becomes known.



The microclimate inside caves and mines is stable, as illustrated by the temperature in two mines in Victoria compared to external temperatures



Photo:Lindy Lumsden

Fun Fact!

A mother bat can find its own young even in a crowd of thousands of pups just by its smell and call!



Bats use different kinds of roosts for winter shelter, as staging sites during migration, and for raising young. Each roost type provides a specific and stable microclimate.

Winter roosts:

- Winter roosts are cool so that the bats can enter torpor during the cooler months.
- Eastern Bent-wing Bats often prefer a microclimate of 9-12°C for winter roosts.
- In southern Victoria, microbats will go into torpor for the duration of winter, only waking occasionally (every few weeks) to have a drink and to feed.
- The process of emerging from torpor is extremely costly in energy reserves. If a bat is disturbed by humans during the winter, arousing from torpor for as little as 2 hours can burn the equivalent of weeks of stored fat!

Staging roosts:

- These can be used as resting sites close to food sources.
- For species that migrate long distances, staging roosts are important resting points, during migration and to congregate before moving to maternity sites.



Photo: Rob Gration

Maternity roosts:

- Female cave-dwelling bats may congregate in very large numbers (tens of thousands) in maternity roosts to give birth and raise their young.
- Pups need warm temperatures and high humidity for their development and growth, so the microclimatic conditions of a maternity roost are extremely important.
- Bat pups are totally reliant on their mothers until they can forage for themselves at 4-8 weeks of age. If a maternity roost is disturbed by humans, the pups may fall to the floor where they will die or be eaten by predators. Or it may cause the females to abandon the site, leaving the young behind.



Southern Bent-wing Bat. Photo: Micaela Jemison



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