

Technical Bulletin # 7

Survey of roost sites of the South-eastern Long-eared Bat at Nowingi



Left: South-eastern Long-eared Bat.

Photo: Lindy Lumsden.

At a glance

- The South-eastern Long-eared Bat is listed as Vulnerable under the Environmental Protection and Biodiversity Conservation Act 1999.
- A study was undertaken in the Nowingi area, west of the Hattah-Kulkyne National Park, to improve knowledge on the roosting requirements, particularly maternity roosts.
- Despite extensive trapping, only two males were caught. Both roosted in dead spouts on mallee trees in areas that were long unburnt.
- Further information is required to fully understand the habitat requirements of this very rare species before specific management actions can be implemented.

This technical bulletin summarises the findings of field research undertaken in November-December 2010 to investigate the roosting requirements of the South-eastern Long-eared Bat (*Nyctophilus corbeni*) in the Nowingi area and adjacent sections of the Hattah-Kulkyne National Park.

This project built on earlier research on the ecology of the South-eastern Long-eared Bat conducted at Nowingi (Lumsden et al. 2008), with the primary objective of increasing understanding of the location, habitat use and requirements of the female component of the population.

Background

The South-eastern Long-eared Bat is listed as Vulnerable under the Environmental Protection and Biodiversity Conservation (EPBC) Act 1999. It was previously known as the Greater (or Eastern) Long-eared Bat (south-eastern form) *N. timoriensis*, and while recognised as a distinct species for some time, has only recently been formally described. In Victoria, it is a very rare species and is listed as threatened under the Flora and Fauna Guarantee (FFG) Act and categorised as Vulnerable.

In Victoria, prior to 2007, the South-eastern Long-eared Bat had only been recorded six times. In 2006/07 and 2007/08 there were an additional 15 individuals captured during an intensive study at Nowingi, west of Hattah-Kulkyne National Park (Lumsden et al. 2008). This research suggested that the South-eastern Long-eared Bat prefers areas of long unburnt habitat, which has a high occurrence of tree hollows. However, more specific habitat requirements are unknown, in particular the requirements of breeding females, which may be limiting as maternity roosts are often more specific than roosts used at other times of the year. Additional knowledge on important habitat requirements could help explain why this species is so rare, and facilitate the identification of key threatening processes and the management actions required to ensure the species' long term viability.

Methods

Study Area

This study was centred on the state forest located west of the Calder Highway between Nowingi and Hattah in north-western Victoria. Some sites were also surveyed in adjacent areas in the west of the Hattah-Kulkyne National Park. Most of the area supports mallee eucalypts over a generally sparse understorey of shrubs and sparse to dense cover of Porcupine Grass *Triodia scariosa*.

The majority of the area has not been burnt since the 1930s or earlier. As a result this area has an abundance of large old trees with hollows and fallen timber on the ground. Although the true age is not known, based on the size of the trees and hollows, it is conceivable that parts of this



Above: A harp trap which caught a South-eastern Long-eared Bat during this study.
Photo: Lindy Lumsden.

area have not burnt for hundreds of years. Mallee trees in this area are of a similar size to ones in the west of the Sunset Country in an area estimated by LaTrobe University to have not burnt since 1845.

Trapping surveys

Field work was conducted from 29 November – 10 December 2010. Bats were trapped using harp traps and mist nets. Harp traps are comprised of a large aluminium frame with two banks of tightly stretched fine fishing line, leading to a catching bag.

In mallee areas, water is often a focal point for bat activity and hence also a focal point for catching bats. However, recent rain in the area had resulted in an unusually large number of temporary water bodies in the study area, making it more difficult to catch bats. Harp traps were set in potential flight paths between trees or amongst denser vegetation.

Nineteen harp traps were set each night for 11 nights. Trapping focused on the sites where South-eastern Long-eared Bats had been captured previously.

Roost site location

Individual South-eastern Long-eared Bats were fitted with light weight radio transmitters, weighing only 0.5g. Signals from the transmitters were used to locate roost sites. Once the tree and the roosting cavity were located, a range of measurements were taken, including tree species, height and diameter of the roost tree, if it was dead or live, the number of hollows in the tree, type of roost cavity, height of cavity above the ground, entrance dimensions and orientation. To compare the roosts used with available trees and cavities, four random hollow-bearing trees were selected around each roost, and measured in the same way.

Table 1: .

Species		% of captures
Gould's Wattled Bat	<i>Chalinolobus gouldii</i>	11%
Lesser Long-eared Bat	<i>Nyctophilus geoffroyi</i>	61%
South-eastern Long-eared Bat	<i>Nyctophilus corbeni</i>	1%
Inland Broad-nosed Bat	<i>Scotorepens balstoni</i>	3%
Inland Forest Bat	<i>Vespadelus baverstocki</i>	4%
Little Forest Bat	<i>Vespadelus vulturnus</i>	4%
Inland Freetail Bat	<i>Mormopterus sp. (sp 3)</i>	9%
Southern Freetail Bat	<i>Mormopterus sp. (sp 4)</i>	9%

Results

Trapping surveys

A total of 205 harp trap-nights were undertaken, resulting in 188 captures of eight species of bat. The most commonly caught species was the Lesser Long-eared Bat *Nyctophilus geoffroyi*. All other species represented less than 12% of the total catch.

Despite intensive trapping at sites where South-eastern Long-eared Bats were captured during previous studies in the Nowingi area, only two individuals of this species were captured. Both these individuals were adult males.

Five new roost sites were located. All roosts appeared to be occupied by just the single individual carrying the transmitter. Roost sites were on average 1.18 ± 0.78 km (range 0.42 – 2.47 km) from the capture point (representing one of that individual's foraging areas). Both individuals typically moved roost site each day. Individuals moved considerable distances between roosts (average 901 ± 584 m, range 238 – 1660 m).

Three of the roosts were located in dead mallee trees, and two were in live Dumosa Mallee *Eucalyptus dumosa*. Irrespective of whether the tree was dead or live, all roosts were in dead spouts, that had similar diameters (8.0 ± 1.3 cm, range 7 - 10 cm). The roosts were on average 1.8 ± 0.4 m above the ground. The average opening width of the entrance to the roost

was 5.2 ± 2.1 cm (range 3 - 8 cm). Four of these openings were near vertical, appearing to provide little protection from the elements. The fifth was at a 45° angle with an overhang providing some protection. The bat using this roost, however, roosted close to the entrance, where it was clearly visible. This roost was used during a period of heavy rainfall, and because of the angle, presumably would have provided some protection from the rain. The hollow was only 11 cm deep.

The roost cavities and roost trees were compared to available cavities and trees to determine if the bats were selecting particular types as roost sites. Roost trees and cavities were similar to available trees and cavities in most respects,



Above: A South-eastern Long-eared Bat visible within its roost. The aerial of the transmitter can be seen extending out of the roost. Photo: Micaela Jemison.



Above: A South-eastern Long-eared Bat roost tree – the roost is in the dead spout on the right side of the tree. Photo: Lindy Lumsden.

i.e. the most common type of hollow was also dead spouts on mallee trees, approximately 2m above the ground with 5cm entrance dimensions. All roosts were located in areas of old-growth mallee, supporting the findings of earlier studies that large areas of long-unburnt mallee are likely to be important for this species.

Implications of the findings

The aim of this study was to increase knowledge of the female component of the Nowingi South-eastern Long-eared Bat population and to locate maternity roosts, however, only two individuals were caught and both were males. In this area females have only been caught during the month

of February, with only males caught during November, December and January field studies. This is different to studies in NSW where females are caught more often than males. The reason for the low number of females caught in the Nowingi area is unknown and further sampling will be required to clarify the situation.

Further information is also required on maternity roosts, plus information of foraging habitat and home range sizes, diet, reproductive success and population dynamics before the critical habitats of this very rare species are fully understood and can be protected and appropriately managed.

Acknowledgements

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Further Information

The information for this bulletin has been taken from "Survey of roost sites of the South-eastern Long-eared Bat at Nowingi", a report for the Mallee CMA by the Arthur Rylah Institute for Environmental Research. For further information about the South-eastern Long-eared Bat study please contact the Mallee CMA on 03 5051 4377.

Project Partners



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