BAT DOINGS AT WARRNAMBOOL

- Peter Ackroyd

Introduction

Since 1967 it has been known that a major maternity site of the Common Bent-wing Bat (*Miniopterus schreibersii*) has been, literally, teetering on the brink of a cliff. *Thunder Point Solution Holes* (registered number: W-8) is a cave with many vertical solution holes and entrances near Warrnambool, Victoria. It is formed in Tertiary limestone on the very edge of a crumbling cliff on a coastline renowned for its ability to rapidly change shape.

A visit in early 1991 by ACKMA members Elery Hamilton-Smith and Peter Ackroyd indicated bats were using the site but whether it was still a maternity site was unable to be determined at that time (Ackroyd, 1991). It was noted then that the cave was in imminent danger of being consumed by the sea. The soft, sandy limestone is rapidly eroded by wave action and by solution. The tiny dome used by the bats is only 0.9 metres in diameter and about 2.0 metres in height. It is located high in the cave, at the top of a solution tube which reaches a point close to the surface. The top of the dome is honeycombed with pockets and orifices eroded by solution. It was mainly these orifices that the bats occupied when the dome was last known to be used as a maternity site, in January 1967 (Hamilton-Smith, pers. comm.).

The only other known maternity site in this region is *Starlight Cave* (W-5). This cave has many entrances and has a strong draught blowing through it. Elery Hamilton-Smith and Peter Ackroyd visited it in early 1991 in the company of a department wildlife officer. On that visit Peter estimated there were over 4,000 bats in the cave but found only a few bats, including juveniles, using a small alcove in a side passage that had been recorded as a maternity site in earlier years.

The Importance of Warrnambool

The coast of Victoria marks, as far as is known, the southern-most limit of Common Bent-wing Bats. Warrnambool is an important region where intermixing of the eastern Victorian, western Victorian and south-east region of South Australia Common Bent-wing Bat populations occurs.

On the morning of Saturday 10th January 1998, Elery Hamilton-Smith and Peter Ackroyd were being driven to Warrnambool by Lindy Lumsden a wildlife officer with the Arthur Rylah Institute for Environmental Research in Heidelberg. During the 3½ hour drive, Lindy talked about the recent research being carried out by Belinda Cardinal of Deakin University. Belinda had found, using DNA analysis, that there was a mixing of genes between the Naracoorte population and the Warrnambool population equivalent to nine bats per generation. From this Belinda had concluded that these two populations could be considered as one. This may be contrasted with the rate of mixing found between the East Gippsland population and the western Victorian population — less than one bat per generation (Cardinal, 1997). The new research confirms earlier bat banding work carried out by Elery Hamilton-Smith and others in the late 1960s (Dwyer, 1969).

Arriving at Warrnambool, the three travellers met Peter Goldstraw, a wildlife officer with the Department of Natural Resources and Environment, and Joanne Smissen, a biologist from Deakin University, Geelong campus.

Thunder Point Solution Holes

A visit to the Thunder Point site at low tide allowed a detailed examination of the bat dome. Joanne waded into the water below the dome and looked directly upwards to see if any bats were present. Because of the distance involved (14 metres), not much could be discerned. However, she could see faint daylight showing through on one side of the dome. At the top of the cliffs, Peter Ackroyd was able to squeeze into a low hole at one side and work his way across a metre wide solution hole which plunged down to the sea below. The limestone was severely fretted and friable in this part of the cave and so he gingerly eased his way across this shaft until he was able to look in from a small hole into the lower part of the solution tube containing the bat dome. Turning around, very carefully, he was then able to squeeze through the small hole and after twisting his body round in the confined space, was able to look straight up to the top of the dome.

The honeycombed surface of the dome was blackened with the markings of bats past. There were a few small deposits of decomposed guano perched on tiny ledges and protuberances but there were no bats. Judging from the age of the guano and the lack of "batty" odour, Peter estimated there had been no bats for at least two years.

After Peter had extracted himself from the confines of the small dome, a discussion ensued as to whether an attempt should be made to reduce the number of entrances into the bat dome — the aim being to reduce the airflow and possibly improve the chances of the bats once again using it as a maternity site. It was decided that as the amount of work was slight and it would have a low visual impact on the site, two of the holes leading into the dome would be closed off with concrete coated wire mesh.

Starlight Cave

Knowing that *Thunder Point Solution Holes* was no longer used by the bats meant that *Starlight Cave* now assumed an even greater importance. It was felt that every attempt should be made to enhance the attributes of the *Starlight Cave* site as a maternity site.

Peter Goldstraw had to leave for another appointment, so Elery, Lindy, Joanne and Peter A drove the short distance to *Starlight Cave* and spent some time examining the options. The main features of *Starlight Cave* are that it is a moderately large cave with two spacious domes, each of which connect through roof holes with the surface. A five metres high passage leads from the base of these two domes to an entrance in the sea cliff. It is this passage which allows the air movement through the cave and out the roof holes in the domes.

The cave often has in excess of 4,000 bats roosting in the cave at any one time but because of the air movement the temperature is presumed to be too low for either dome to be used as a viable maternity site. Instead the bats have in the past used a small side chamber, which is a far from ideal site. Recent trapping at the cave suggests there are some areas in the main domes which may be being used as a maternity site now (Lumsden, pers. comm.).

It was considered that if one of the two large domes were to be covered over with an airtight lid, it would become a far more suitable maternity site. A trial cover was proposed for one of the domes so that the principle may be tested without too much money being expended. Peter A was able to give a rough idea of the methods and materials required while Elery advised on the standard of airtightness necessary.

It was further decided that if the trial cover proves successful in encouraging Common Bent-wing Bats to use the dome as a maternity site, and determining this will require careful monitoring using bat counts and occasional trapping, a permanent cover will be manufactured using a reinforced concrete pad. At 6.00pm, Peter A, Elery and Lindy left Warrnambool for Melbourne after a rather full day.

Conclusion

The combination of two ACKMA members, two wildlife officers and a biologist provided a broad range of skills and knowledge that was able to be applied to several inter-related and knotty problems. As a result, the likelihood that efforts to provide improved conditions for breeding Common Bent-wing Bats in the Warrnambool area would be successful was considerably enhanced.

It was recognised that a monitoring program will need to be put in place at *Starlight Cave*, prior to making any alterations to the site, so that the change in bat numbers and the ratio of lactating females to other bats may be used to assess the success (or otherwise) of the roof-hole cover. As for the Thunder Point site, the return of any bats as a result of reducing the airflow in the small bat dome, by closing off some of the holes, will be a win. At the moment there are no bats using this site at all.

REFERENCES

Ackroyd, Peter (1991) Thunder Point Cave — At Last! *Nargun* **24**(2): 16-17.

Cardinal, Belinda R (1997) Genetic Variation and Population Structure in Miniopterus schreibersii (Chiroptera: Vespertilionidæ) from south-eastern Australia. BSc (Hons) thesis, Deakin University, Geelong.

Dwyer, P D (1969) Population ranges of Miniopterus schreibersii (Chiroptera) in south-eastern Australia, Aust. J. Zool., **17**: 665-686.