

THE BLACK BRAES LAVA TUNNELS, NORTH QUEENSLAND . . . K.G. GRIMES

The Black Braes lava tunnels lie in the Chudleigh Volcanic Province, about 150 km north of Hughenden. The area consists of a series of basaltic lava flows of Pliocene and Pleistocene age which originate from a number of vents. Lava tunnels next to Barkers Crater, about 15 km east of Black Braes, were visited by Henry Shannon in 1974. The Black Braes tunnels had been visited briefly by me the previous year but only minimal exploration was done as I had no light (Grimes 1973). In August 1977 the UQSS-VSA north Queensland expedition spent two days exploring and mapping the tunnels (Grimes 1977). This is the detailed report on that work.

The tunnels are on Black Braes station, managed by Bill Blakeney. The station homestead is a short distance west of the Kennedy Highway, and the tunnels are reached by following a track west and south-west for about 5 km from the homestead to a fence and then following the fence about 2 km west, past the crater, over a sandy rise to a swamp. From the swamp we drove north back onto the basalt and then followed a poorly-defined 'valley' north-west for about a kilometre until we could see the green patch growing in the doline of BB1 and BB 2 (see locality map). We set up a pleasant camp next to the doline beside a large spreading fig tree. There is no water in the area and a 4WD vehicle (or heavy suspension) is needed for the last 4 km.

The caves appear to have been known for some time as we found some old carvings on the fig trees, e.g. "E.Mitchell, 1938" and a carving of a face on the tree we camped beside, and "June 3, C.W., 1911, A.H.Z., S.A.S., 1901" on a fig tree in the doline of BB 3 and 4.

The basalt flow containing the tunnels originated from the pit crater about 1.5 km to the south-east. This crater has an irregular outline and a steep cinder cone at its western edge. The tunnels were located by virtue of the collapse dolines associated with them. There were no long collapse sections such as at Undara, but a number of irregular shallow depressions occur in the area. These are up to 5m deep and have flat floors and rubble sides. They probably formed by sagging of a semi-solid crust into a still liquid core shortly after the flow formed. Draining of the lava tunnels may have assisted this process as some of these depressions seem to be related to the tunnels (e.g. at 023737 and 036772 on the locality map). Several pressure ridges also occur in the area.

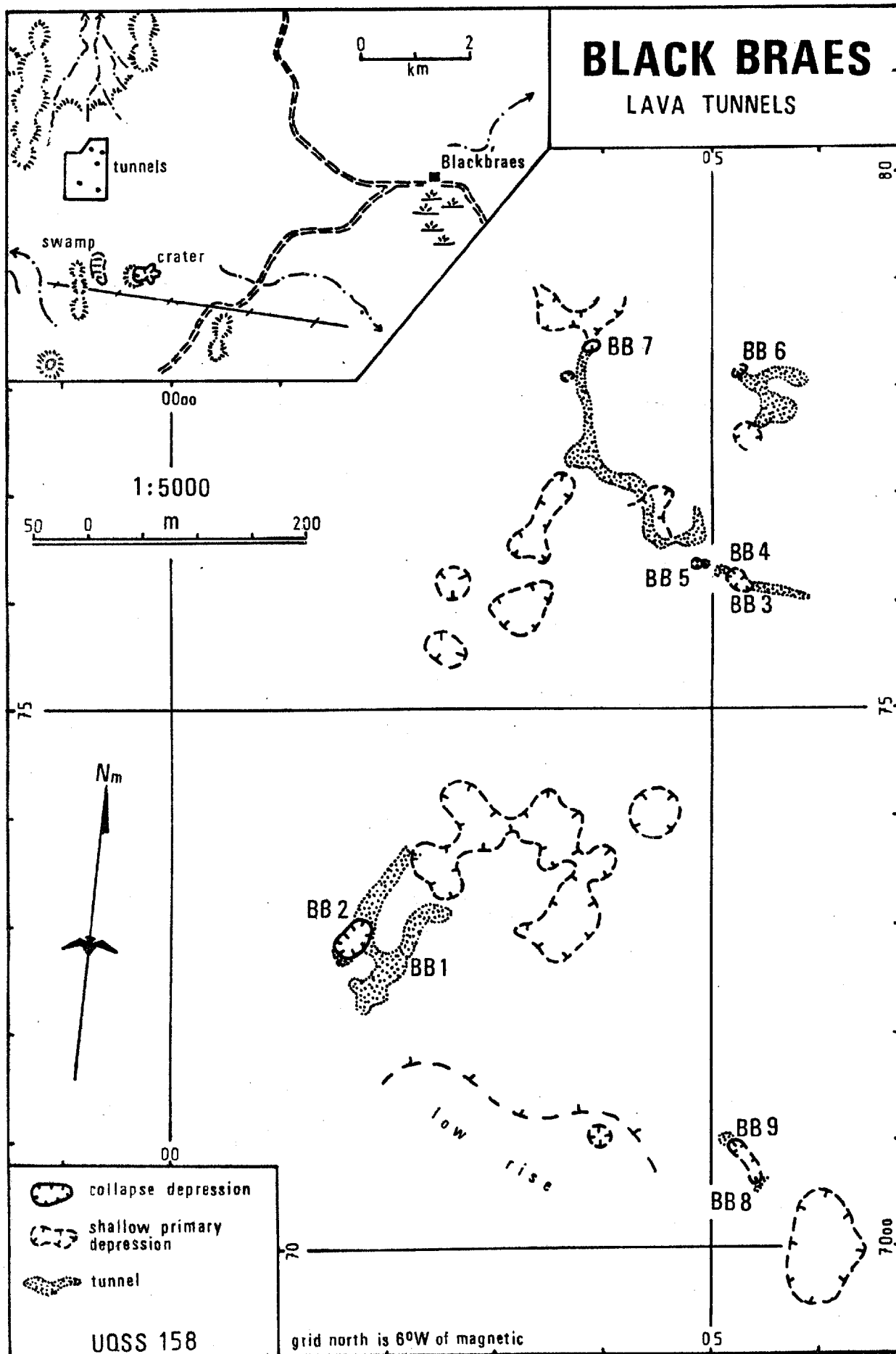
Surface vegetation was mostly open iron-bark forest with spear grass. Patches of vine thicket occurred in the deeper dolines.

Seven caves were located, ranging in size from small overhangs (e.g. BB 9) up to 302 m long (BB 7). Some of the tunnels had large cross-sections, up to 20 m wide and 7 m high. There were large collapse domes up to 10 m high in several of the tunnels. Speleothems are rare. Some small calcite flowstone coatings and short (up to 10 cm) stalactites were seen on the walls and there were a few genuine lava stalactites.

CAVE DESCRIPTIONS (see accompanying maps)

BB 1 and BB 2 both occur in a large doline 50 m long, 25 m wide, and 10 m deep. The floor is of rubble covered by leaf litter. There are a number of large fig trees and other vine thicket species. A small overhang at the southern end of the doline was not numbered as a cave. The two entrances are separate from the human point of view, but bats were flying back and forth between the caves via small gaps among the collapsed blocks along the wall of the doline.

BB 1 is the eastern entrance. A brief climb down the entrance rock-pile leads to a short earth-floored tunnel. Some snail shells were collected from here and have been identified by Martin Bishop (Qld Museum) as *Eremopeas tuckeri* and *Torresitrachia acuticostata*. Some large recent macropod bones were also collected here but have not been fully identified. At the far end of this entrance tunnel a climb up a rubble slope leads into



downflow end of the tunnel. The tunnel is earth-floored for most of its length, with occasional old guano mounds. The roof drops sharply about 45m into the cave where part of a flow layer has broken away, revealing bands of vesicles. Flow layers from 0.5 to 2m thick are also visible elsewhere in the tunnel. The low roofed section lasts for only a short distance and then the tunnel opens up into a large chamber with a mound of rubble in the centre and a group of tree roots descending from the domed roof which is up to 10m high. For the next 100m the tunnel is very spacious, being up to 15m wide and 9m high. Eventually a rockpile choke is encountered and one has to crawl through a narrow section to reach the final part of the tunnel. This final section runs first to the east and then to the north for a short distance and ends in a second rockpile choke. Bats were flying into spaces in this rockpile but we could not penetrate any distance.

There was a large colony of bats (*M. schreibersii* ?) in this tunnel and the presence of a number of old guano mounds led Elery to believe that the tunnel was a maternity site for the bats. A guano sample from one mound was analysed by Peter Bridge, but contained only gypsum.

The surface map (based on a rough compass and pace survey) shows that the southern end of BB 7 is only 20 m from BB 5. It is possible that the collapse section in BB 7 was once a junction with a tunnel entering from the south-east via BB 3,4 and 5 and then branching to run both to the north-west and to the north-east. The northeastern branch may have connected with BB 6.

BB 8 is basically just a large overhang at the northwestern end of an elongate collapse doline. It is largely filled with breakdown cone, with only a narrow belt of earth floor along the inner wall.

BB 9 is a small low rockpile cave at the south-eastern end of the same doline as BB 8.

SIGNIFICANCE OF THE AREA

The main significance of the area probably lies in the discovery of a maternity colony of *Miniopterus* bats. The nearest known bat maternity colonies are those at the Undara lava tubes, about 150 km to the north, and at the Fanning River limestone caves, about 250 km to the east. The BB 7 tunnel has some geological interest in its good exposures of flow layers in the ceiling. E. Hamilton-Smith will report on the invertebrate fauna in due course.

PROSPECTS FOR FUTURE EXPLORATION

We have checked all the entrances in the immediate area and there seems to be little prospect for further discovery here. The terminal rockpiles in BB 2 and BB 7 might yield to a determined excavation. Bill Blakeney had not been into the cave but had heard that one of them went for "a mile". Allowing for the difficulties in judging distances underground, and for growth by exaggeration, this could be the BB 7 tunnel. Certainly I was surprised to find after the survey that it was only 300m as it seemed more at the time. On the air-photos some flow lines can be seen running north and east from the crater. These might contain tunnels but there are no obvious entrances.

REFERENCES

- GRIMES, K.G. (1973) - North Queensland lava tunnels. *Down Under* 12(4), 121-125.
- GRIMES, K.G. (1977) - UQSS North Queensland expedition, August 1977, Summary report, *Down Under* 16(4), 94-97.
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