

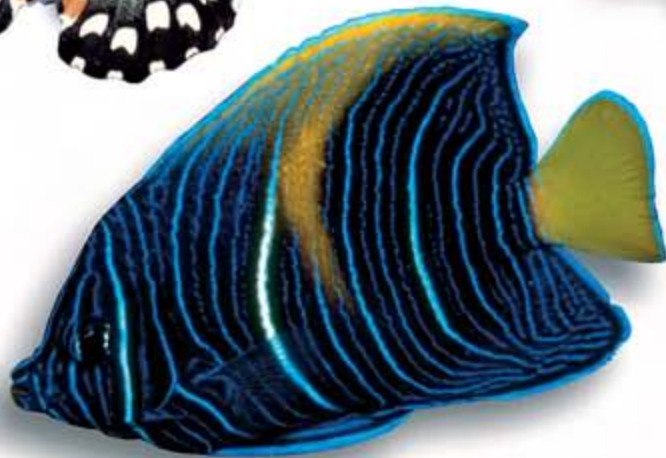


هيئة البيئة - أبوظبي  
Environment Agency - ABU DHABI

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# THE EMIRATES A NATURAL HISTORY



- MAMMALS • BIRDS • MARINE LIFE
- REPTILES • AMPHIBIANS • INSECTS
- GEOLOGY • FOSSILS • HABITATS
- LIFE ON THE SEASHORE
- PLANTS • CONSERVATION

WILDLIFE OF THE UNITED ARAB EMIRATES

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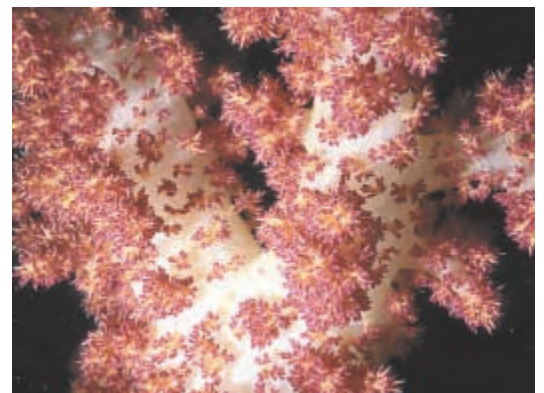
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# THE CAVE FAUNA OF JEBEL HAFIT

THE JEBEL HAFIT CAVE SYSTEM, Magharah Qasr Hafit, was sealed off and completely unknown to the outside world until 1996, when earth-moving equipment removed a cap of rock and revealed a large cavity. Stones dropped into this were heard to keep falling for quite some time. Olivia Pozzan was the first person to enter the cave, that same year, as part of Brian Goggin's team. On her second visit, with Tony Waltham, and Tim and Pam Fogg in 1997, Pozzan noticed a number of colourless animals on the floor of narrowing 'Labyrinth' passageways beyond the chambers known by then as the 'Red Room' and 'Crystal Ballroom'. A survey team, including Pozzan and Aspinall, was assembled in 2000 to collect some of these individuals for scientific determination, successfully employing the technique of smearing Danish Blue cheese on the cave walls to lure the hapless cave-dwelling troglobites out of inaccessible cracks and crevices. Mammal bones noticed previously in the cave floor deposits were also targeted for collection. This particular cave system has not been visited since.

Magharah Qasr Hafit is a cave system located just west of the summit ridge of Jebel Hafit, the karst limestone mountain south of Al Ain (Waltham and Fogg 1998; Fogg, Fogg and Waltham 2002). The cave contains over 450 metres of explored shafts, passages and chambers reaching a depth of 96 metres below ground. Chambers known as the 'Red Room', 'Crystal Ballroom' and 'Labyrinth' are



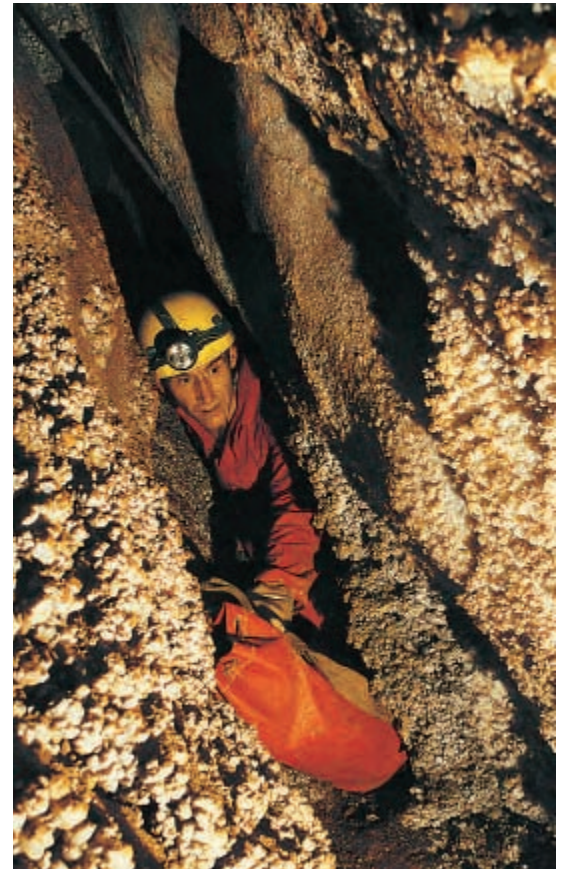
located between 75 and 96 metres below the entrance. The relatively constant temperature of the cave air is close to 32°C, with humidity of nearly 100 per cent.

A visit to Magharah Qasr Hafit was made in June 2000 to investigate the cave biology and to collect a stalagmite sample that was subsequently dated to 337,000 years. The passages are much older, and originate from either a wetter past environment or a phase of hydrothermal activity (Fogg, Fogg and Waltham 2002). Fauna included the remains of various bat species and living bristletails that are unpigmented and may be unique. Other fauna and flora collected included a small fox, an isopod (also unpigmented), a number of live and dead ants, as well as remains of vegetable material.

The living bristletails (Thysanura) were discovered in the 'Labyrinth' passages and in the 'Red Room'. Bristletails are primitive wingless insects with elongate flattened bodies, three tail-like appendages at the posterior end of the abdomen and small separate compound eyes (Delany 1954). Bristletails occur in a wide variety of habitats, ranging from houses, ant or termite nests, under stones, bark and in leaf litter, and generally feed on vegetation (Remington 1954). The specimens from Magharah Qasr Hafit appear to be adapted to a cave environment, having long antennae and lacking any pigmentation. Little scientific work has been carried out on



bristletails but they regularly occur as troglobites (cave-dwellers). Although there are about 370 species recorded worldwide, it is estimated that, for example, only 60 per cent of the North American fauna is documented despite decades of intensive research. In the Arabian Peninsula, only the Lepismatidae have been examined (Irish 1991), and no work has been undertaken on other families within the Thysanura.





Clusters of small bones were found at various sites in the 'Crystal Ballroom' and 'Red Room'. These were mainly fragments of post-cranial elements of bats (Chiroptera). Two mandibles and skull (cochlea) fragments were preserved amongst the material collected. Two, and possibly three, species of bat are represented.

A mandible in 'Red Room no. 1' resembled that of the Egyptian tomb-bat *Taphozous perforatus* Geoffroy, 1818, a species distributed in west and east Africa, Egypt, south-west Arabia, Oman, Iran and north-

west India (cf. Bates and Harrison 1991, 1997; Kock 1969, 1974, 1981). Other bat remains in the 'Red Room' included two skull (cochlea) fragments. Quite large, these appear to belong to a member of the Rhinolophidae (horseshoe bats).

The collection of bones from 'Red Room no. 3' included a canine tooth fragment, a small astragalus (ankle bone) plus several caudal vertebrae, these belonging to a small fox. A mandible and skull fragments of a different species of bat, as yet unidentified, were found in the 'Crystal Ballroom'.



Any of these animals may have entered the cave through small fissures and were unable to exit before they perished. Alternatively, the bats may be the residue of a more permanent roost within the cave at some time when a fissure or fissures were open to the surface.

The remains from Jebel Hafit add to knowledge of the UAE's fauna and the troglobites may be unique as the mountain and its caves have apparently constituted an environmentally-isolated niche for many millennia.

*Mark Beech, Olivia Pozzan & Simon Aspinnall*

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