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# Bagshaw Cavern

[SK 171 809]

## Highlights

Bagshaw Cavern lies immediately behind a large resurgence, and is developed at a very high stratigraphic level within the limestone sequence. It has a less complex configuration than other cave systems in the Peak District, reflecting its more recent development.

## Introduction

Bagshaw Cavern lies west of Bradwell Dale (Figure 4.9), cutting through a gentle anticline plunging with the easterly dip. It lies in thin-bedded limestones of upper Brigantian age, at a stratigraphically higher level in the Carboniferous Limestone than any other cave in Derbyshire. Its development has been influenced by the incision of Bradwell Dale and the presence of reef mounds to the east. The cave stream has a large catchment area of autogenic input from limestone moors, updip to the west, and this is joined by allogenic waters entering sinkholes along the shale boundary east of Bradwell Dale. The Bagshaw resurgence, at the head of Bradwell Brook, is one of the largest risings in the Peak District karst.

The evolution of Bagshaw Cavern and Bradwell Dale has been discussed by Ford *et al.* (1975, 1977a), and aspects of its hydrology have been discussed by Christopher and Wilcock (1991). Description of the cave passages are given by Gill and Beck (1991), and in a brief account by Ford and Gunn (1992).

## Description

Bagshaw Cavern is entered via a staircase in an old mine working. At the foot, a phreatic tube partly full of sediment leads south to join the main cave at the Dungeon, a 6 m deep pothole. From the bottom of this, a lower series of intermittently active passages trends north-east towards the resurgence (Figure 4.9). Above the Dungeon, an upper series of abandoned passages trends southwest along the strike. Both upper and lower series display fine vadose downcutting in phreatic bedding tubes up to 4 m high and wide. The system is developed in thinly bedded limestones, and many passages show good examples of tabular collapse of roof blocks. The active stream is normally seen only for short distances at the two ends of the system between flooded sections of its route; upstream in Top Stream Passage, the water rises for over 30 m through flooded caverns. Much of the flow comes from the Quarters Farm Swallet (Figure 4.9).

The western end of the main passages approaches the abandoned phreatic tubes and rifts of Outlands Head Cave. The New Series of Bagshaw, discovered in the 1930s, extends into a calcite pipe vein and contains chambers decorated with straw stalactites up to 2 m long. An aven rises from it into Batham Gate, a high-level passage almost directly above the main series and extending south parallel to Top Stream.

## Interpretation

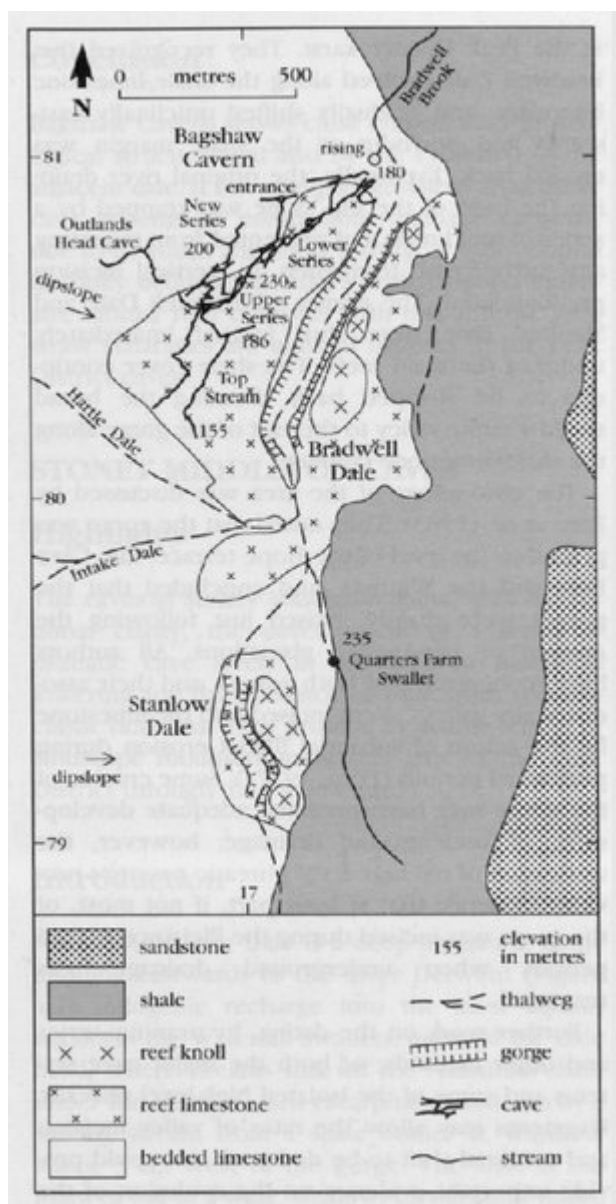
The Bagshaw Cavern drainage system is unusual in crossing a limestone anticline close to a major dry valley. Its development was closely linked to the formation of Bradwell Dale and the erosion of the limestone plateau to the west. As the shale cover was progressively removed eastwards, unroofing of the limestone allowed entry of sinking water and the development of phreatic circulation. Surface drainage experienced a uniclinal shift downdip until trapped by reef mounds, at which point Bradwell Dale began to form immediately to their west; it therefore cut down through a gentle eastward-plunging anticline, instead of following the strike round the nose of the fold. Most of Bagshaw Cavern was a late development, largely postdating the initial excavation of Bradwell Dale during the Hoxnian or Ipswichian interglacial. The

cave is a young system, of relatively simple geometry, which has not developed to the same extent as those around Castleton or Stoney Middleton, despite having a comparable throughflow of water. The main passages lie at altitudes of 190–210 m, and the older conduit of Batham Gate is at the 230 m level, maintaining its level by following the strike. With continued incision of Bradwell Dale the underground drainage has migrated downdip; downstream of its phreatic lift in the Top Stream sump, the present streamway lies close to the 180 m level, just above the resurgence. Both the upper and lower series of Bagshaw Cavern exhibit classic vadose trenching of phreatic bedding passages, while permanently flooded passages represent the youngest part of the system.

## Conclusion

Bagshaw Cavern shows close control both by geological structure and also by the evolution of the adjacent dale. It has a simpler geometry than other cave systems of comparable drainage capacity, due to its youth and short history. It is developed in thinly bedded limestones which permit extensive tabular roof collapse; both this and the long straw stalactites are unusual features in the Peak District caves.

## References



(Figure 4.9) Geological map of Bradwell Dale and Stanlow Dale. Bagshaw Cavern is shown in outline, and lies mainly in the bedded limestones beneath the reef knolls (from survey by Eyam Exploration Group).