# Hoyle's Mouth and Little Hoyle Caves

## Highlights

These localities show sediments which span the last 50,000 years, including the Late Devensian ice maximum and the Devensian late-glacial. These contain rich fossil mammal faunas typical of a glacial period, together with human artefacts.

## Introduction

The Little Hoyle and Hoyle's Mouth Caves are important for sequences of deposits which have yielded rich faunas and artefacts dated towards the end of the Late Devensian. Environmental and geochronological evidence from recent excavations at Little Hoyle Cave show that the deposits probably span 50,000 years, although the principal mammal finds (which include bear, red fox, reindeer and collared lemming), are thought to date from the Late Devensian glacial maximum (c. 18,000 BP) and the Late Devensian late-glacial. Faunal evidence from nearby Hoyle's Mouth Cave has also been ascribed to the latter period on the basis of archaeological finds. Both caves have a longstanding history of research.

## Hoyle's Mouth Cave

### Description

Hoyle's Mouth Cave [SN 112 003] or 'the Hoyle' is a winding tunnel cave formed in Carboniferous Limestone. The large entrance at 21m (70 ft) OD opens northwards onto marshy land of the Ritec Valley, and must once have overlooked a long inlet of the sea. According to Garrod (1926) its various passages and chambers run for a total length of about 130 ft (39.6m). The deposits in the cave have been much disturbed, although it appears that in places up to lm of ossiferous cave earth and breccia was originally sealed by a layer of stalagmite 0.09m thick (Leach 1931). More recently, Savory (1973) described a sequence near the cave entrance of —

4 Disturbed layer with Creswellian culture flints, early Iron Age, Roman and post-Mediaeval potsherds, recent animal bones, shells, iron-slag, charcoal and several hearths

3 Powdery yellow earth with bones of hyaena, cave bear and bison? and occasional flints

2 Sandy yellow silt

1 Sticky brown earth with stones

Continuing excavations by the National Museum of Wales (H S Green) have shown that deposits *in situ* remain at the site.

### Interpretation

The first exploration of the cave was made in the 1840s by Colonel Jervis and Major Pugett, although no account is left of their discoveries (Leach 1931). However, according to the Reverend G N Smith, they dug up three Celt axes, two of flint and one of bronze. In 1860, Smith himself began to dig, although no plans nor stratigraphic detailsaccompanied his brief reports read before the British Association at Oxford (1860), Cambridge (1862), the Cambrian Archaeological Association at Haverfordwest (1864), and the Naturalists' Association at Bristol (1866). The 1860 paper was also republished as a local pamphlet *On the Tenby Bone Caves.* Smith recorded that the Hoyle had contained a stalagmite floor overlying a stony cave earth. The stalagmite and cave earth had been much intermixed and he was therefore never satisfied that the flints and human bones that he found had originated beneath the stalagmite floor. By 1866, Smith had recovered about

200 flint flakes, and others of 'chert' together with bones of bear, sheep, pig, dog and fish, and shells (limpet, mussel, periwinkle, cockle). According to Smith the artefacts had been fashioned by Neolithic Man, who he also considered had raised the tumuli on the nearby 'Ridgeway'.

The Hoyle was explored again in 1865 by Winwood and Sanford in conjunction with Smith (Winwood 1865). This excavation revealed an undisturbed breccia in the farthest part of the cave which yielded the remains of cave bear, hyaena, fox, deer, ox, the bones of a large bird and flint. Winwood thought that recent shells and rolled pebbles within the cave indicated occupation by the sea on at least two occasions. He also excavated at the cave entrance where he found a large quantity of artefacts in association with Irish elk, ox and horse. He noted that some of the tools were not flint, but a non-local vitrified igneous rock, later designated by J F N Green as 'adinole' (Leach 1931). Human remains, probably associated with the artefacts, were also found below the level of the stalagmite floor.

The Hoyle was visited by W Boyd Dawkins in 1872, gathering materials for his book on cave hunting (Dawkins 1874). The flints he found were considered by him to be of Palaeolithic age.

Laws (1877–8) recorded mammal remains of species already described from the cave. He noted that their significance was limited, as the deposits in which they were found were mixed and disturbed. At approximately the same time, Rolleston et *al.* (1878) explored the cave, noting that there were 'no objects of special interest'. Their investigation at Hoyle's Mouth was therefore concluded at an early stage and attention diverted to nearby Little Hoyle or Longbury Bank Cave.

Around 1878, Jones began to dig at Hoyle's Mouth and an account of the deposits and a plan of the cave was published (Jones 1882). From disturbed deposits in the innermost chamber, he recorded bones of many of the species described earlier, and flint chips. Nearer to the cave entrance, and beneath unbroken stalagmite, he recovered remains of brown bear and a single flint flake, and at the cave entrance bones of reindeer, wild boar, recent animals, humans and a variety of flint and adinole artefacts. Jones was sceptical about the earlier records of hyaena, cave bear and Irish elk and suggested that the cave had been a dwelling and burial place during the Neolithic, and not the Palaeolithic as Dawkins had suggested. Laws (1888), however, suggested that the cave had probably been a hyaena den in Palaeolithic times, but that Neolithic Man had subsequently used it as a dwelling place and cemetery.

Hoyle's Mouth was next visited by Prestwich (1892) who found evidence of Neolithic flints and flakes only. In contrast, Dixon (1921) discerned the presence of Aurignacian and Magdalenian cultures of the Palaeolithic age, with flint implements representing the Aurignacian culture, and those of adinole the Magdalenian. Garrod (1926), however, while supporting a broadly Palaeolithic age for the industries, saw no basis for such a sub-division.

Leach (1913, 1918b, 1931, 1945) provided reviews of the early excavations and finds from Hoyle's Mouth. He thought that the cave had probably been a bear and hyaena den during Palaeolithic times, and inhabited periodically by Man in Neolithic, Bronze Age, Iron Age and early historic times.

With the belief expressed by Leach (1931) that few undisturbed deposits remained at the Hoyle, interest in the site subsequently dwindled. However, a threat to exploit the cave commercially led to a rescue dig by the National Museum of Wales in 1968 (Savory 1973). Savory dug trenches at the cave entrance and immediately inside the cave recording details of the stratigraphy (see site description). He noted that although the deposits were largely unstratified, there could be little doubt that most of the flints discovered by earlier workers had been derived from deposits in the cave, originally sealed by a stalagmite layer. He suggested that these artefacts represented occupation in the Late Devensian late-glacial or early Holocene, and that they were of broadly Creswellian culture. He was particularly influenced by Webley's report on the silty sand at Hoyle's Mouth which was compared to a similar deposit in Nanna's Cave, Caldey which Cornwall (*in* Lacaille and Grimes 1955) considered had been deposited during the Boreal period of the Holocene. Savory, therefore, argued that the silty sand at Hoyle's Mouth also dated from the Boreal, *c.* 8000–6000 BC, although he noted that this did not agree with the late-glacial (or earlier) fauna. He considered it possible that the cave had been occupied by Man before the end of the Devensian Stage, with occupation lasting into the Boreal and Atlantic periods of the Holocene. This suggestion was supported by some of the flint artefacts which had a markedly microlithic tendency, and whose Mesolithic character was also consistent with this later Holocene phase. In contrast, ApSimon (1976) suggested that Savory's

(1973) correlations were very loosely based; placing the Creswellian industries at the Hoyle into the late-glacial rather than the early Holocene, a practice also followed by Houlder (1977).

The site has also been mentioned by George (1970) and Bowen (1974) in a regional context, and continuing excavations by the National Museum of Wales (H S Green) are expected to elaborate the sequence.

## Little Hoyle Cave

### Description

Little Hoyle Cave [SS 112 999], sometimes known as Longbury Bank Cave, is situated in a narrow Carboniferous Limestone ridge. Three entrances open on the north side of the ridge, one on the south side. The centre of the cave is connected to the surface via a large chimney. The cave lies at *c.* 20m OD, around 7m above the floors of the narrow valleys on either side. It would probably have been within the range of the Ipswichian sea-level (Green *et al.* 1986). The stratigraphic succession is complex, and it varies at different locations within the cave (Green *et al*. 1986). Green *et al.* opened trenches within the cave, adjacent to the chimney and on platforms at the northern and southern entrances. On the north platform they recorded the following sequence:

10 Soil

9 Orange-brown clay with stones

8 Upper scree

7 Buff-grey silt

6 Stony silt

5 Pink clay

4 Middle scree

3 Orange and black clay

2 Lower scree

1 Bedrock

### Interpretation

The first known exploration of Little Hoyle Cave was made by Winwood in 1866 who partly excavated a kitchen midden in the north chamber (Laws 1888; Leach 1931). His discoveries included bones of *Bos,* goat, badger and dog, shells of marine molluscs, pottery fragments, flints and human bones. Many of these remains were probably of post-Pleistocene age (Green *et al.* 1986). The cave was also cursorily examined around 1870 by Smith, although no records of his discoveries were made (Laws 1888; Leach 1945). Excavations in 1877 by Power and Laws (Laws 1878), revealed breccia cemented to the cave walls and overlying deposits on the cave floor as 'brackets' or 'shelves'; beneath these cemented breccias, they discovered a variety of mostly historic and one or two prehistoric remains. According to Green *et al.* (1986) no certain Pleistocene fauna was recovered.

Between 1877 and 1878 the cave was examined by Laws and a committee comprising Rolleston, Lane Fox (better known as General Pitt Rivers), Busk, Dawkins, Evans and Hilton-Price; accounts of their findings were published by Laws (1878) and Rolleston *et al.* (1878). This phase of excavations was centred largely upon emptying the central chimney of deposits, from which were recovered the human remains of some 9–11 individuals associated with Roman and later finds, flints and other implements, bones of domestic animals and shellfish. From the northern cave, Rolleston and his

team recorded some 160 fragments of bone and teeth including remains of rhinoceros or elephant, mammoth, bear, red deer, eagle and black grouse, some of which had apparently been gnawed by hyaenas. In all, some 500 fragments of human bone were recovered from Little Hoyle, but Rolleston *et al.* considered there was no evidence for Man having been contemporary with the extinct Pleistocene mammals: although there was some evidence to suggest that the northern cave had been occupied by Man, perhaps in Bronze Age times, most of the remains had entered the cave via the chimney and were of possibly relatively recent age. Rolleston *et al.* also noted that the cave had at some time probably been invaded by the sea, although Dixon (1921) considered this unlikely. From this phase of excavations is an important watercolour, now preserved in Tenby Museum, and entitled *Longbury Bank cave near Penally, explored by Prof. Rolleston and E Laws.* This painting is important in allowing a comparison of the early accounts of the cave with more recent excavations (Green *et al.* 1986).

Laws in 1888, in his book *The history of Little England beyond Wales … ,* concluded that the cave had been exhausted by earlier work, remarking that the accumulated evidence indicated that the cave had been a hyaena den during the Pleistocene, while he also considered the site to be "… the most instructive Neolithic find in Pembrokeshire". Reviews of the early excavations and finds from the Little Hoyle were provided by Leach (1913, 1918b, 1931, 1945).

More recently, three seasons of excavations (1958 1963) have been undertaken by McBurney (McBurney 1959). He described a sequence which included two principal scree beds, the lower and upper screes. From the upper scree he recovered a number of bones including those of reindeer, bear and fox, charcoal, and a single, large, typically Creswellian culture, pen-knife blade. The lower scree yielded one identifiable bone, that of *Lepus* cf. *timidus.* He tentatively suggested a Late Devensian late-glacial rather than Holocene age for the Creswellian artefact. More recently, Bowen (1974) used McBurney's evidence in support of a Devensian age for the scree.

Recently, Little Hoyle was selected by the National Museum of Wales as the Upper Palaeolithic representative in a programme of excavations intended to elaborate the Palaeolithic settlement of Wales. One aim of this programme was the definitive publication of McBurney's work; this and the preliminary results of the excavations at Little Hoyle carried out by Green and his colleagues during 1984 and 1986 were published by Green et *al.* (1986).

Detailed geochronological and environmental evidence presented by Green and his team has shown that the surviving deposits at Little Hoyle span some 50,000 years. A Uranium-series age determination of 47,500 +9,500 –8,500 BP on a wall stalagmite capping provides a minimum age for the underlying deposits. Bone remains including *Ursus* and *Rangifer,* in the cemented breccia beneath such capping material, would therefore appear to be Early or Middle Devensian in age, coming from the oldest deposits so far known from the cave.

Most of the cave deposits were formed fluvially or as thermoclastic scree, and appear to date from the Late Devensian. Uranium-series and radiocarbon dates from bones in a red sandy silt in the north cave, are closely grouped at around 18,000 BP. This shows that the included fauna of brown bear *Ursus arctos,* reindeer *Rangifer tarandus,* fox *Vulpes vulpes,* arctic lemming *Dicrostonyx torquatus,* water vole *Arvicola terrestris,* tundra vole *Microtus gregalis,* hare *Lepus* sp. and some large birds dates, at least in part, from the Late Devensian glacial maximum. Currant (*in* Green et *al.* 1986) suggested that elements of a Pleistocene fauna including large mammalian herbivores such as woolly rhinoceros and mammoth, recovered by earlier workers, also probably dates from this phase, as such species did not survive in Britain after the retreat of the Late Devensian ice-sheet.

The succeeding deposit contains a fauna including reindeer, arctic lemming, Norway lemming *Lemmus lemmus,* water vole, northern vole *Microtus oeconomus,* shrew *Sorex* sp., and is dominated by bones identified by C Harrison (BMNH) as those of barnacle goose *Branta leucopsis* (Bechstein). It seems likely that this fauna dates from the Late Devensian late-glacial (Green *et al.* 1986).

The 'platform sequence' recorded by Green et *al.,* although not yet dated, would also appear to be Late Devensian late-glacial (*c.* 13,000–10,000 BP) in age. Preliminary pollen evidence shows a period of fluctuating climate with three successively more severe cold phases, separated by successively less mild phases. Green *et al.* noted that the exact chronological position of the Upper Palaeolithic settlement of the Little Hoyle could not yet be finally resolved, but they suggested that the upper scree of the platform sequence (bed 8), with its included Creswellian artefact (McBurney 1959),

might date from Late Devensian late-glacial Pollen Zone III.

Further work at Little Hoyle by Green *et al. is* expected to provide dating of the platform sequences, which would seem to offer the best possibility for correlation with the sequence inside the cave. Bones from the site have also been used in a comparative dating study using amino acid, radiocarbon and Uranium-series techniques (Rae *et al.* 1987).

Hoyle's Mouth and the Little Hoyle Caves provide some of the most detailed evidence currently available from the Upper Palaeolithic period in Wales. Recent excavations show that the deposits at Little Hoyle cover about 50,000 years. Faunal remains dated to *c.* 18,000 BP show that the area attracted both a varied large and small mammal fauna during the Late Devensian. This dated evidence is particularly important for it lends support to the views of Oakley (1968), Bowen (1970b) and Molleson and Burleigh (1978) that parts of South Wales may have been inhabited by Man even at the peak of the Late Devensian glaciation, and also suggests that the area was free from glacier ice at this time. Much of the sequence and its included fauna at Little Hoyle, however, would appear to date from the Late Devensian late-glacial, and it is believed that the upper scree from the platform sequence, together with McBurney's Creswellian artefact, may date from as late as Pollen Zone III of the late-glacial. The vertebrate fauna from that period is dominated by the bones of the barnacle goose, which appears to have been present at the site as a breeding population. This is the first such record from Pleistocene Britain. Faunal evidence from Hoyle's Mouth has also been dated, archaeologically, to approximately the same time.

These caves provide contrasting records to the more extensive sequences at Minchin and Bacon Hole Caves, Gower, and, together with Cat Hole Cave, provide a detailed record of environmental changes towards the end of the Devensian.

The Hoyles Caves provide an important record of environmental conditions in the Devensian Stage. Little Hoyle, in particular, is important for showing detailed faunal, archaeological, pollen and other palaeoenvironmental evidence that can be related to a radiometrically dated timescale. This evidence establishes that the principal faunal remains and artefacts date from both the late-glacial and the earlier glacial maximum of the Late Devensian. The evidence also supports the belief that parts of South Wales were inhabited by Man at the peak of the Late Devensian glaciation.

## Conclusions

The caves of Little Hoyle and Hoyle's Mouth, contain an important sequence of deposits representing the last ice age. In particular, they contain fossils of the ice age fauna, together with archaeological remains showing that Man was active in the area at that time. Dating techniques have shown that the deposits represent some 50,000 years, and the principal fossil and archaeological remains date from the maximum of the last ice age, about 18,000 years ago, and from the period between about 14,000 years and 10,000 years.

**References**