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The Elbolton Pot Bear – a further late glacial bear occurrence in the south eastern Yorkshire Dales.

Phillip J Murphy¹ and Andrew T Chamberlain²

1: School of Earth and Environment, University of Leeds, LS29JT, UK

2: Department of Earth and Environmental Sciences, University of Manchester, M139PL, UK

Abstract: A radiocarbon date obtained from a partial juvenile bear skeleton recovered by cavers confirms bears were both present and breeding in the Wharfedale area during the Late Glacial/Windermere interstadial. This study highlights the importance of curating bone finds made by sporting cavers as they have great potential to contribute to palaeontological, archaeological and palaeoenvironmental studies.

The bone caves of the Yorkshire Dales are well known features of the region and have attracted the interest of antiquarians and archaeologists since early Victorian times (e.g. Lord *et al.* 2012). The sites have been subject to a number of studies over recent years from both an archaeological (e.g. Wilford 2019) and paleoclimatological perspective (e.g. Lundberg *et al.* 2010). Sporting cavers have explored many miles of new passage in the area during which time they have often come across vertebrate remains. Caving clubs in the UK have a long history of recording their exploits, including finding bones in club journals, caving periodicals and caving related books. These can have irregular publication dates and small print runs but are collated in both caving club libraries and the national British Caving Library. The caver finds begin to be documented in the 1950s when exploratory caving really took off in the area. The caver find records have been collated in an online gazetteer (Murphy 2019) and attempts at analysing the resulting list have been published (Murphy and Chamberlain 2003 and 2008). The compilation of this catalogue has resulted in a reinvestigation of a number of sites (e.g. Murphy 2020, Murphy *et al.* 2002) and this paper documents the process and results of a further such investigation into an intriguing caver find from the east of the region.

In the spring of 1951 Don Robinson and Len Huff, cavers from the Upper Wharfedale Fell Rescue Association based in Grassington, North Yorkshire, discovered bones in sediment while digging towards the surface in passage leading up from the Main Chamber in Elbolton Pot (NGR SE 00716150) (Figure 1). The bones were identified by Dr Arthur Raistrick as being those of a juvenile bear. The front half of the skeleton was recovered including the skull which was fragmented (Anon 1998, Lodge 1994, Anon 1951) (Figure 2). The fragments were reconstructed by Len Huff who “washed all the bones and teeth, and tried to piece them together like a three dimensional jigsaw” (Anon 1976 p.23). The skull is now exhibited as part of the collection of Cliffe Castle Museum, Keighley (Collection No. L.8.51. Bradford Museums and Galleries). Prior to this the skeleton was exhibited at Cartwright Hall, Bradford (Mitchell 1976). The location of the rest of the recovered bones is unknown.

The position of the find in an ancient cave fragment situated on one of Wharfedales distinctive 'reef knolls' is intriguing (Figure 3). These distinctive rounded hills to the west of Grassington formed part of a fringing reef complex along the southern margin of the structural high of the Askrigg Block during early Carboniferous times (Waters *et al.* 2017). The caves developed in the knoll limestone are little studied and poorly understood (Long 2017). Elbolton Pot is a 150 m long and 41 m deep cave situated on the flank of Elbolton Hill and is separate from, though connected to, Elbolton Cave (NGR SE 0776149) which is referred to as Navy Noodle Hole in the Northern Caves series guide books (Brook *et al.* 1988), a site subjected to antiquarian and archaeological excavation in the latter part of the nineteenth and early years of the twentieth centuries. The Elbolton Pot bones were recovered from sediment filling the cave passage which has been described as glacial silt. Speculation on the origin of the skeleton have included being dragged into the cave by animal activity and being placed by human activity as food storage. Emplacement as a result of water action was discounted by Lodge (1994) as the present day cave entrance was too narrow but the bones could have entered the system by another as yet unexplored entrance. The coherent nature of the assemblage is inconsistent with water transportation as no sorting of bones by size has occurred. Ages of between 3000 and 5000 but also up to 10000 years have been suggested.

Bear bones have been recovered from a number of cave sites in the Yorkshire Dales including Victoria Cave (Lord *et al.* 2007), Kinsey Cave and Greater Kelco Cave on Giggleswick Scar, Moughton Fell Fissure and Raven Scar Cave on Ingleborough, and both Heights Cave and Elbolton Cave (Navy Noodle Hole) in Wharfedale (Chamberlain 2002). A recent review of Holocene bear remains in the British Isles has highlighted the complex population history of bears but evidence from Victoria Cave and Raven Scar Cave suggest they were hibernating in the area during the early Holocene (O'Regan 2018). Bear bones recovered from an archaeological rescue dig in a cave on Giggleswick Scar have proved to be the most recent evidence of wild bear in England dating from AD 420-610 (Hammon 2010).

A box of bones preserved by the family of the original discoverer was found to contain, amongst other items, the hand and foot bones of a juvenile bear and comparison with the bones shown in the photograph taken of the original assemblage show these are from the Elbolton Pot skeleton. The radiocarbon dating of a phalange gave a date of 11531 ±33 BP (uncalibrated) placing the bear as having died during the late Glacial/ Windermere interstadial (Greenland Interstadial 1). This date is very similar to that from another partial juvenile bear skeleton recovered from a cave near Conistone Dobb 7 km to the north (11655±46 BP uncalibrated, Edwards *et al.* 2014) and fits with a series of dates on bear bones, reindeer bones and bone artefacts, horse and ox bones from Victoria Cave near Settle 18 km to the west (Lord and Howard 2013). A total of fourteen radiocarbon dates on bear remains from the Yorkshire Dales are listed by Edwards *et al.* (2014) as part of a genetic study which shows bear to be the most common late glacial vertebrate remains recovered from the caves of the area. This new date confirms bears were breeding in the area during the latter part of the Late Glacial interstadial. It also confirms the important role cave bone finds have to play in unravelling the paleoenvironmental history of the Yorkshire Dales and

how important ensuring the preservation of materials discovered by sporting and exploratory caving activity can be.

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Figure captions:

Figure 1: A sketch section showing the position of the bones in Elbolton Cave produced by L Huff in the early 1950s. P.Huff.

Figure 2: The bone assemblage recovered in 1951 including the reconstructed skull. P. Huff.

Figure 3: View looking westward across Wharfedale towards Elbolton Hill. The entrance to Elbolton Pot is close to the summit of the hill.