



An interim report on radiocarbon dates obtained on human remains recovered from an Early Neolithic burial site at Kewstoke Road rock shelter, Weston-super-Mare, UK

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Abstract: Following the recovery of human remains from a burial site associated with a rock shelter at Kewstoke Road, near Weston-super-Mare, several samples were sent for radiocarbon dating. Four radiocarbon dates have so far been obtained on a representative selection of samples from the site, the obtained dates ranging between 3784–3651 BC and 3501–3351 BC. These radiocarbon dates place the timing of the burials within the Early Neolithic period. Findings from Kewstoke Road are compared with other discoveries of Early Neolithic remains in the caves of the Mendip Hills in Somerset, UK.

Keywords: Mesolithic; Neolithic; Palaeolithic; stable isotopes; terrestrial diet.

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Introduction

The excavation site described in this Report lies at Kewstoke Road, Weston-super-Mare, North Somerset (centred on British National Grid Reference: ST 3491 6353), which is located on the north-facing flank of Worle Hill and lies at approximately 60 – 65 metres above Ordnance Datum (aOD) (Fig.1). Specifically, the site of the archaeological investigation is at the base of

a ‘rock shelter’ in a prominent rock outcrop with a soil- and gravel-covered platform, adjacent to a scree slope (*Plate 1*).

During works by the landowner, to construct a pathway cutting across the scree-slope, human remains were uncovered. Police Forensic officers confirmed that the human remains were of considerable age and, therefore, no further police investigation would be required.



Figure 1:
Locations of the Kewstoke Road rock shelter excavation and other Mendip caves mentioned in the text that contain Early Neolithic human remains.
[OpenStreetMap contributors (2015) Planet dump; accessed 15/12/24.]



Plate 1: Overview of Kewstoke Road rock shelter and exposed human remains prior to excavation and recovery. Some initial cleaning of loose debris has been done (Scale = 0.4m).



Plate 2: North- and northwest-facing sections prior to excavation commencing. Exposed human remains (cranium and long bone, SK104) can be seen centre right of main image and in the inset. Main image scale = 2m. Inset image scale = 0.5m.

At the request of the landowner(s) an archaeological investigation was conducted, and a Ministry of Justice Licence was applied for and granted (No. 24-0123 dated 30 May 2024). The archaeological excavation was conducted in line with current guidelines and standards regarding an excavation that included the recovery of human remains (Mitchell and Brickley, 2017). The site is on private land and there is no public access.

Geology

Bedrock underlying the site comprises part of the Clifton Down Limestone Formation, a sedimentary bedrock formed between c. 344.5 and c. 337 million years ago during the early part of the Carboniferous Period. It is described as splintery, dark grey, calcite and dolomite mudstones, pale grey oolitic, dark grey bioclastic, and oncolitic limestones, and some mudstones, with scattered cherts and silicified fossils. It was deposited in a barrier/back barrier/shelf lagoon setting. To the south lies a boundary with sedimentary bedrock belonging to the Mercia Mudstone Group, formed during the mid to late Triassic Period, between c. 252.2 and c. 201.3 million years ago (BGS, 2024).

The Carboniferous limestones crop out as part of a discontinuous, elongated, west–east-trending ridge, the Weston-Worle inlier, surrounded by Mesozoic, or younger rocks and deposits (Whittaker and Green, 1983). Although no superficial deposits are recorded in the immediate area around the site location, extensive tidal flat deposits – clay, silt and sand – that formed during the Quaternary to Recent interval (c. 11.8 thousand years ago to the Present), lie below 10m aOD (BGS, 2024), approximately 500m farther to the south. In the wider area, past human activity has been recognized on the basis of Palaeolithic, Mesolithic, and Neolithic remains recovered from the limestone caves of the Mendip Hills (Whittaker and Green, 1983).

Radiocarbon dates on human remains from Kewstoke Road rock shelter and other Mendip caves

An initial radiocarbon analysis, on behalf of Avon and Somerset Police, was conducted on a human partial left mandible that reported a date range with 95.4% probability covering the period 3784–3651 BC (early Neolithic). A second analysis on material recovered during the police forensic investigation (a human long bone fragment) confirmed this result, providing a date range of 3791–3653 BC.

A further two radiocarbon analyses were conducted on material recovered during the 2024 archaeological investigation; a partial petrous (part of the skull) from a juvenile (SK 112) provided a date range with 95.4% probability covering the period 3501–3351 calBC; and an adult (SK 104) fibula (left, distal end) provided a date range 3635–3383 calBC (see Table 1).

Lab. No.	14C	±	Date BC		δ ¹³ C	δ ¹⁵ N
SUERC-126136	—	—	3784	3651	−20.8	10.2
SUERC-128083	4967	21	3791	3653	−20.9	10.3
SK 104	4757	27	3635	3383	−21.0	10.9
SK 112	4616	23	3501	3351	−21.3	13.2

Table 1: Radiocarbon (¹⁴C) date ranges and stable isotope analyses for the human remains recovered from Kewstoke Road rock shelter.

Whittle *et al.* (2011) estimate that the beginning of the Neolithic in southwestern England was between 3940 and 3735 BC. An outline summary of other Mendip caves that have produced radiocarbon dates pertaining to the Early Neolithic period is presented here (Simmonds, 2014, and Table 2). At Picken’s Hole, Compton Bishop (ST 3965 5502), a radiocarbon date of 4800 ± 55 bp, calibrated to 3695–3500 years BC (86.8% confidence) was obtained for a human premolar, indicating an early Neolithic date; however, there was nothing else found at the location, neither finds nor context, to add support to a Neolithic date (ApSimon and Mullan, 2018). In view of the limited number of surviving remains it has been suggested that Picken’s Hole might have been used during an intermediary period before the bulk of the remains were removed to another site for secondary burial (Peterson, 2019).

Location	NGR	14C	±	Date BC	
Picken’s Hole, [Compton Bishop]	ST 3965 5502	4800	55	3695	3500
Chelm’s Combe, [Cheddar]	ST 4634 5447	4680	45	3630	3365
Totty Pot, [Cheddar]	ST 4826 5357	4706	35	3630	3370
Hay Wood Cave [near Hutton] (dates range)	ST 3398 5824	—	—	3946 to 3781	3622 to 3368

Table 2: Other Mendip caves with earlier Neolithic radiocarbon (¹⁴C) dates on human remains.

A medium-sized rock shelter that was located at Chelm’s Combe in Cheddar, Somerset (ST 4634 5447) has, unfortunately, been lost to quarrying activity. The site was, however, unusual. In the cliff face below the main shelter, a small rock-cut chamber that had been used for burial, and subsequently overlain by limestone scree, was discovered by the excavation team. Large quantities of human remains were recovered from the main rock shelter upper fills (Balch and Palmer, 1926). A radiocarbon date of 4680 ± 45 bp, which calibrates to be single tween 3630–3365 years BC, was obtained on a long bone from either the rock-cut chamber or the main rock shelter levels (Ambers and Bowman, 2003).

At Chelm’s Combe, Peterson (2019) suggests that two different stages of secondary burial took place. These included an intermediary period, during which bodies were placed and left in the rock shelter long enough for some fragmentation to occur. Selected elements were then removed for secondary burial elsewhere, perhaps in the nearby rock-cut chamber. The bone assemblage recovered from that part of the site seems to represent a secondary burial assemblage, dominated by disarticulated crania, long bones, and axial elements. Carnivore damage to two femurs provides further evidence that they were exposed prior to their final burial.

To the southeast of Chelm’s Combe, excavations conducted at Totty Pot, Cheddar (ST 4826 5357) recovered an assemblage containing human remains, animal bones (wild and domesticated species) and artefacts including microliths and Beaker to Middle Bronze Age pottery sherds (Gardiner, 2016). Two published radiocarbon determinations on human and animal bone indicated the presence of at least one Mesolithic human, 7450–7050 cal BC, (Ambers and Bowman, 2003). Further AMS (Accelerator Mass Spectrometry) ¹⁴C dating on six individuals produced a wide range of dates (Schulting *et al.*, 2010). The earliest, 7445–7080 cal BC, confirmed the previously Mesolithic date. The date is very similar to that reported by Ambers and Bowman (2003) and probably belongs to the same individual (Schulting, *et al.*, 2010). The other five analyses produced dates ranging between early Neolithic (3630–3370 cal BC) and late Neolithic (2830–2460 cal BC). This prominent Neolithic funerary presence was unexpected, given the lack of any diagnostic material remains relating to this period. It is clear that at least four distinct events involving the deposition of human remains had occurred at Totty Pot, the earliest during the Mesolithic and at least three temporally distinct episodes of deposition during the Neolithic (Schulting *et al.*, 2010).



Figure 2: Continuous section showing general distribution of human remains (highlighted in red) prior to commencing the excavation and recovery of human remains (see also Plate 2). Length of scale bar = 1m.

At the northwestern extent of the Mendip Hills, Hay Wood Cave, near Hutton, North Somerset (ST 3398 5824) is a limestone cave located on the north-facing flank of Bleadon Hill. The cave, which lies within a steep, tree-covered, slope, was excavated by members of the Axbridge Caving Group and Archaeological Society, between 1957 and 1971 (Everton, 1972). Excavations at the site recovered a large assemblage of human remains and artefacts, including Mesolithic microliths. Results of an AMS dating programme pursued by Schulting et al. in 2013 confirmed the attribution of the assemblage to the earlier Neolithic period. The use of the cave for burials was modelled as commencing in the period 3930–3715 BC and ending 3580–3350 BC (95.4% confidence), with the majority of 10 dated individuals centred on 3600–3500 cal BC. Stable carbon and nitrogen isotope data indicated a predominately terrestrial diet, despite the proximity of the site to the coast (Schulting et al., 2013). Hay Wood Cave is about 5km south of the Kewstoke Road rock shelter excavation site.

Chelm's Combe, and probably, Picken's Hole are probably associated with secondary burials, whereby bodies were left to decompose in one location for an unspecified period before selected body parts were removed and transported for interment at an alternative location. Successive inhumations took place, whereby multiple individuals were deposited in the same place during an extended period. At Totty Pot, for example, this took place for between 530 and 830 years, whereas at Hay Wood Cave there was a shorter episode of between 150 and 400 years (Peterson, 2019). Sequential inhumation, or repeated use of the same place for later burials, would imply social continuity at (or close to) that location.

In general, this small group of Mendip caves that were chosen as suitable locations for Early Neolithic burials, all share a northerly facing aspect. Chelm's Combe, Hay Wood Cave, and a postulated alternative entrance to Totty Pot face due north, and Picken's Hole faces northeastwards (Peterson, 2019).

Stable isotopes and diet

Isotopic analysis of bones and teeth can help to shed light on the diets of people in the past. Stable carbon ($\delta^{13}\text{C}$) measurements reveal that values measured for humans who obtained 100% of their protein from marine sources are essentially the same as those recorded from fish or seal bone, *circa* $-12 \pm 1\text{‰}$. In contrast, humans obtaining all their protein from terrestrial plants and/or animals will have values *circa* $-21 \pm 1\text{‰}$. Stable nitrogen ($\delta^{15}\text{N}$) measurements reflect trophic levels and can inform on the relative proportions of plant and animal protein in the diet (Schulting, et al., 2013). Human consumers of terrestrial plants and animals typically have $\delta^{15}\text{N}$ values of about 6–10‰ in bone collagen, whereas consumers of freshwater or marine fish and/or seals may have $\delta^{15}\text{N}$ values of 15–20‰ (Tykot, 2004).

Samples analysed from the Kewstoke Road rock shelter show $\delta^{13}\text{C}$ (range -20.8 to -21.3‰) and, generally, $\delta^{15}\text{N}$ (range 10.2 to 10.9‰) values of bone collagen, which might be indicative of people who did not include significant marine resources in their diet. It is noted, however, that sample SK112 (a juvenile) returned an elevated level of $\delta^{15}\text{N}$, $+13.2\text{‰}$. This value is still below the range expected to indicate a significant input of freshwater or marine fish to the diet. This higher level of $\delta^{15}\text{N}$ might reflect a residual nursing effect, i.e. an outcome of breastfeeding or weaning (Waters-Rist et al., 2011). A similar occurrence was noted by Schulting et al. (2013) when reporting stable isotopes and Neolithic diet for samples recovered from Hay Wood Cave.

Comments

Four radiocarbon dates so far obtained on a representative selection of samples from the Kewstoke Road rock shelter burial site, range between 3784–3651 BC and 3501–3351 BC. Comparison of these dates with those obtained from the nearby Hay Wood Cave shows a remarkable similarity, where use at that cave for burials has been modelled as commencing 3930–3715 BC and ending 3580–3350 BC (Schulting et al., 2013).

Scree deposits commonly display an open texture, and are subject to highly active, mobile processes. Thus, it is extremely common for human bones and artefacts that have been placed on such surfaces to be moved, redeposited, and combined in complex ways (Peterson, 2019). Influence of this type of inherent mobility of scree materials is reflected in the widespread distribution of the human (and faunal) remains and artefacts recovered at the Kewstoke Road rock shelter. Similar processes are also suggested by the boundaries between some of the contexts recorded being notably indistinct.

Production of full and detailed report on the findings from Kewstoke Road rock shelter is currently underway and will be published later. Further archaeological excavation, concentrating on the rock shelter platform, is scheduled to commence in spring/summer 2025.

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Map data copyrighted OpenStreetMap contributors and available from [<https://www.openstreetmap.org>]

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